



# **Relationship between Breakfast and Student Learning Achievement in Cipicung Village, Sumedang Regency, West Java**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background:** Breakfast is an important factor affecting the concentration and thinking ability of school-age children. Irregularity or the habit of not eating breakfast can hurt students' academic performance.

**Aims:** This study aims to determine the relationship between breakfast habits and the educational achievement of 5th-grade students at Pamoyanan Elementary School, Cipicung Village, Sumedang Regency, West Java.

**Methods:** This study is an analytical observational study with a cross-sectional design. The sample consisted of all 35 5th-grade students, who were selected using the total sampling technique. Data

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were collected through a questionnaire regarding the frequency and habits of breakfast and documentation of report card grades as an indicator of academic achievement. Data analysis was carried out using the chi-square test with a significance level of 0.05.

**Results:** The results showed that the majority of students scored in the "Fair" category, with 80.0% of the total students in this category. As many as 20.0% of students were in the "Good" category, where most students who regularly eat breakfast have good academic achievement. Based on the results of the Spearman test, there is no significant relationship between morning habits and the academic achievement of 5th-grade students at Pamoyanan Elementary School. With a p-value of 0.9740 ( $p > 0.05$ ), this result shows that breakfast habits do not have a significant effect on academic achievement in the data analyzed.

**Conclusion:** This study concluded that there was no significant relationship between breakfast habits and academic achievement of 5th grade elementary school students at SDN Pamoyanan, as indicated by the p-value of 0.9740. Although students who regularly eat breakfast tend to have better academic achievement descriptively, statistical analysis did not support a significant relationship. Therefore, although breakfast remains important for general health and well-being, it may not directly affect academic achievement in this particular sample.

**Keywords:** *Academic achievement; breakfast; eating habits; elementary school students; elementary school.*

## 1. INTRODUCTION

In the United States, there are approximately 81.5 million students enrolled in the education system. Of these, approximately 38% are in primary education, which includes children aged 5 to 11. Additionally, data shows that approximately 90% of children aged 3–17 are enrolled in formal education, reflecting high levels of participation in the education system. These figures demonstrate the commitment of societies to education and the importance of access to education for young people (Trading Economics, 2024). In Asia, the percentage of children of primary school age varies across countries, but overall, there is significant progress towards universal enrollment. In East Asia and the Pacific, more than 90% of children are enrolled in primary school. In Japan, approximately 99% of children aged 6–12 are enrolled in primary school, while in South Korea, enrollment rates are nearly 100% for children aged 6–12. In China, approximately 95% of children aged 6–12 are enrolled in primary school, while in India, approximately 96% of children aged 6–14 are enrolled in primary school, and in the Philippines, 92% of children aged 6–11 years are enrolled in primary school (Asia and Pacific Regional Education for All Reports, 2024). In Indonesia, around 93% of children aged 7–12 years are enrolled in primary school. This figure reflects the government's efforts to improve access to education for children. Although there are challenges in some areas, especially in remote areas, the participation rate in primary education shows a strong commitment to children's education

(Ministry of Education and Culture of the Republic of Indonesia, 2023; UNICEF, 2022; Soheilipour et al., 2019). School-age children are an important investment for the future of the nation. The quality of today's children determines the quality of the next generation, so efforts to improve human resources must start early, be carried out systematically, and sustainably. Optimal child growth and development are highly dependent on good nutritional intake in terms of quality and quantity (Christiana et al., 2024; Paramasatiari & Wedhangga, 2020; Galito & Spitznagel, 2016). During school, children's eating patterns change significantly. If previously children ate more often with their parents, then when they enter school age, they eat more often at school with their friends. Therefore, parents must continue to monitor their children's energy and nutritional intake regularly so that children can learn well and develop optimally. With good breakfast habits, parents can ensure that their children get nutritious food that supports their daily activities optimally (Bleszynski & Angkat, 2023; Rampersaud et al., 2005; Hasz & Lampert, 2012).

Breakfast is an important part of daily nutritional intake, which should include an increase in calories of around 20–35% of the body's daily calorie needs. Ideally, breakfast is consumed at least two hours after waking up, and preferably before 10:00 a.m (Napitupulu & Millenando, 2019). However, research shows that many students in Indonesia have problems with concentration. Around 46.2% of students have difficulty focusing on studying, and a large number of students even fall asleep in class

during national exams (Jiwaning, 2019). This problem is often related to poor breakfast habits. Many students only drink water before going to school or even skip breakfast altogether. This is often caused by a lack of appetite for breakfast food and a lack of variety in the breakfast menu. The impact is a decrease in students' ability to concentrate during learning, which can hinder their overall learning process (Maulidya, 2018; Radono, 2022).

Low concentration during learning activities can also be influenced by hunger. Some school children in Indonesia often skip breakfast because their parents are not used to preparing breakfast or lunch. Breakfast itself refers to the first meal consumed in the morning before starting daily activities, which includes the main course and side dishes. Breakfast is the first food intake that enters the body after fasting while sleeping at night. During breakfast, the brain gets another intake of nutrients (Dian & Hariyani, n.d.). A healthy breakfast should meet at least a quarter of the daily nutritional needs. So, at least the breakfast menu should contain carbohydrates, protein, fat, vitamins, minerals, and fiber, as well as enough water to help the digestive process, increase energy, as well as concentration and memory (Wila, 2015; Geno, 2019). Previous studies have shown that students who regularly eat breakfast tend to have better concentration and higher academic performance compared to those who often skip breakfast. This is because breakfast can increase blood glucose levels, which are important for brain function and cognitive processes. Conversely, students who skip breakfast often experience decreased focus and memory, which can negatively impact their learning outcomes. By understanding the relationship between breakfast habits and academic achievement, it is hoped that effective strategies can be found to improve students' academic performance and support their overall development. This study aims to explore the impact of breakfast habits on students' academic achievement in the village and provide recommendations that can be applied in the local educational environment (Ministry of Health of the Republic of Indonesia, 2020; Gao et al., 2021). Therefore, this study is expected to contribute in the form of health information and can also be used as a reference or comparison by other researchers in discussing the importance of breakfast. The purpose of this study was to determine the relationship between breakfast and academic achievement of grade 5

students of SDN Pamoyanan in Cipicung Village, Sumedang Regency, West Java, in the 2023/2024 academic year.

## **2. MATERIALS AND METHODS**

### **2.1 Research Design**

This study is an analytical observational study with a cross-sectional design. This study aims to see the relationship between independent variables and dependent variables, namely the relationship between breakfast habits and academic achievement of grade 5 students of SDN Pamoyanan in Cipicung Village, Sumedang Regency, West Java, in the 2023/2024 academic year.

### **2.2 Time and Place of Research**

The research was conducted at Pamoyanan Elementary School, Jatigede, Sumedang Regency, West Java. Time of Research was conducted in August - September 2024

### **2.3 Population and Sample**

The population in this study was all 5th grade students of Pamoyanan Jatigede Elementary School, Sumedang Regency, West Java. Furthermore, sampling using the total sampling technique obtained a sample size of 35 participants who met the inclusion criteria and were not excluded.

### **2.4 Research Instruments**

Research instruments are tools used to collect data or information that is useful for answering research problems. Instruments as tools at the time of research that use a questionnaire method.

### **2.5 Data Analysis**

Data analysis in this study will be carried out in several stages, namely:

#### **2.5.1 Univariate analysis**

Univariate analysis aims to see the frequency distribution of independent variables and dependent variables. All data from univariate analysis are presented in the form of a frequency distribution table.

#### **2.5.2 Bivariate analysis**

Bivariate analysis is carried out on two variables that are suspected of being related or associated. Analysis of the results of statistical tests using Spearman's Rank test

### 3. RESULTS AND DISCUSSION

#### 3.1 Results

Table 1 is a demographic description of the respondents of this study. The valid and reliable research questionnaire was distributed to 35 respondents, consisting of 13 respondents (37.1%) male and 22 respondents (62.9%) female. From the data obtained, the average age of respondents was 10 to 12 years, with the following distribution: the 10-12 year age category was 23 respondents (65.7%), the 11-12 year age category was 11 respondents (31.4%), and the 12- 13-year age category was 1 person (2.9%). Parents' occupations were also asked in the questionnaire, which were divided into the father's occupation and the mother's occupation.

The results obtained for the father's occupation category were 6 respondents (17.1%) stated that their father had died, 13 respondents (37.1%) had a father who worked as a farmer, 6 respondents (17.1%) had a father who worked as a trader, 9 respondents (25.7%) had a father who worked as a laborer, and 1 respondent (2.9%) had a father who worked as an employee. Meanwhile, for the category of mother's work, as many as 26 respondents (74.3%) had mothers who acted as housewives, 5 respondents (14.3%) had mothers who worked as traders, 1 respondent (2.9%) had a mother who worked as a household assistant, 1 respondent (2.9%) had a mother who worked as a laborer, and 1 other respondent (2.9%) had a mother who worked as an employee.

**Table 1. Demographic Data of Respondents of Grade V Students of Pamoyanan Elementary School**

Characteristics	Frequency	Percentage
<b>Age</b>		
10-11 years	23	65.7
11-12 years	11	31.4
12-13 years	1	2.9
<b>Gender</b>		
Male	13	37.1
Female	22	62.9
<b>Father's job</b>		
Farmers	13	37.1
Traders	6	17.1
Laborers	9	25.7
Employees	1	2.9
Not working	6	17.1
<b>Mother's job</b>		
Housewife	26	74.3
Trader	5	14.3
Household assistant	1	2.9
Laborer	1	2.9
Employee	1	2.9

**Table 2. Breakfast Pattern of Grade V Students of Pamoyanan Elementary School**

Question Items	Frequency	Percentage
<b>Breakfast Frequency / Week</b>		
0-2times/week	6	17.1
3-4 times/week	12	34.3
5-7 times/week	17	48.6
<b>Breakfast Time</b>		
No Breakfast	2	5.7
After 10 am	4	11.4
6-10 am	29	82.9
<b>Breakfast Menu</b>		
Milk / Tea	1	2.9
<b>Bread / Cassava / Sweet Potato</b>	0	0
Rice + Egg + Vegetables	34	97.1

Table 3 is data on Optimal Cognitive Performance in Grade V Students of SDN Pamoyanan

**Table 3. Distribution of the impact of breakfast on concentration, ease of doing assignments, and ease of understanding lessons in grade V students of SDN Pamoyanan**

Question Items	Frequency	Percentage
<b>Breakfast affects concentration</b>		
Never	4	11.4
Sometimes	11	31.4
Always	20	57.2
<b>Breakfast makes it easier to do assignments</b>		
Never	3	8.6
Sometimes	6	17.1
Always	26	74.3
<b>Breakfast makes it easier to understand lessons</b>		
Never	2	5.7
Sometimes	13	37.1
Always	20	57.2

Table 4 shows data on the negative impacts of not eating breakfast on fifth grade students at SDN Pamoyanan.

**Table 4. Distribution of the impact of not eating breakfast on drowsiness/tiredness and exam results in grade V students of SDN Pamoyanan**

Question Items	Frequency	Percentage
<b>Sleepy / Easily Tired</b>		
Disagree	17	48.6
Agree	5	14.3
Strong Agree	13	37.1
<b>Test Result</b>		
Good	4	11.4
No Change	16	45.7
Bad	15	42.9

**Table 5. Student Semester Grades for the 2023/2024 Academic Year**

Semester Grades	Frequency	Percentage
Good	7	20
Enough	28	80
Less	0	

**Table 6. Cross tabulation of breakfast with respondents' academic achievement**

Breakfast Pattern	Academic Achievement Index				Total	
	Enough		Good		Frequency	Percentage
	Frequency	Percentage	Frequency	Percentage		
Less	1	2.9	0	0.0	1	2.9
Enough	3	8.6	1	2.9	4	11.4
Good	24	68.6	6	17.1	30	85.7
<b>Total</b>	<b>28</b>	<b>80.0</b>	<b>7</b>	<b>20.0</b>	<b>35</b>	<b>100</b>
<b>Uji Spearmen Rank: <math>P = 0.9740</math> (<math>p &gt; 0.05</math>)</b>						

## **4. DISCUSSION**

### **4.1 Breakfast Pattern of Grade V Students of Pamoyanan Elementary School**

A description of the frequency of respondents' breakfast in one week was obtained. The table shows that 17 respondents (48.6%) are accustomed to having breakfast 5-7 times/week, 12 respondents (34.4%) are accustomed to having breakfast 3-4 times/week, and 6 other respondents (17.1%) are accustomed to not having breakfast or having breakfast only 2 times/week. From the results obtained, there are still many respondents who skip breakfast even though breakfast functions as the main source of energy and nutrition needed to produce optimal learning. In the daily breakfast time table of respondents, 29 respondents (82.9%) have breakfast between 06.00 and 10.00, 4 other respondents (11.4%) have breakfast after 10.00, and 2 respondents (5.7%) do not have breakfast. The breakfast menu table shows that 34 respondents (97.1%) have a breakfast menu in the form of a main menu consisting of rice, eggs, and vegetables, and 1 respondent (2.9%) has a breakfast menu in the form of drinks only, such as milk or tea. From the results obtained, almost all respondents' breakfast menus were main menus that could fulfill energy and nutritional needs to get through the day.

### **4.2 Optimal Cognitive Performance in Grade V Students of SDN Pamoyanan**

In the concentration table, a description of the influence of breakfast shows that 20 respondents (57.1%) feel that breakfast always affects concentration, 11 respondents (31.4%) feel that breakfast sometimes affects concentration, and 4 respondents (11.4%) feel that breakfast never affects concentration. Then, a description of the good impact of breakfast is obtained in the form of making it easier to do assignments. The table shows that 26 respondents (74.3%) feel that breakfast always makes it easier for respondents to do the tasks given, 6 respondents (17.1%) feel that sometimes breakfast always makes it easier for respondents to do the tasks given, and 3 respondents (8.6%) feel that breakfast never makes it easier for respondents to do the tasks given. In addition, 20 respondents (57.1%) feel that breakfast always makes it easier to understand learning, 13 respondents (37.1%) feel that sometimes breakfast makes it easier to understand learning, and 2 respondents (5.7%) feel that breakfast never makes it easier to understand learning.

### **4.3 The Negative Impact of Not Having Breakfast on Grade V Students of Pamoyanan Elementary School**

The table shows the negative impact of not having breakfast in the form of feeling sleepy or tired easily. The table shows that 13 respondents (37.1%) strongly agree that not having breakfast makes you sleepy and tired easily, 5 respondents (14.3%) agree that not having breakfast makes you sleepy and tired easily, and 17 respondents (48.6%) disagree that not having breakfast makes you sleepy and tired easily. Then in the exam results column if you don't study, 4 respondents (11.4%) choose good, 16 respondents (45.7%) choose No Change and 15 respondents (42.9%) choose the bad option with 15 responses (42.9%). This table provides an overview of the distribution of responses to the exam results held, showing the dominance of negative and neutral responses to the results.

### **4.4 Student Semester Grades for the 2023/2024 Academic Year**

Based on the semester assessment, the distribution of learning outcomes of grade 5 students of SDN Pamoyanan shows that the majority of students are in the "Enough" category, with 28 students or 80.0% of the total number of students. Meanwhile, there are 7 students or 20.0% who get grades in the "Good" category. There are no students included in the "Poor" category.

### **4.5 The Relationship between Breakfast and Academic Achievement**

Based on the results of the Spearman test, there is no significant relationship between morning habits and academic achievement of 5th grade students at Pamoyanan Elementary School. With a p-value of 0.9740, this result indicates that breakfast habits do not have a significant effect on academic achievement in the data analyzed. This finding is in line with research conducted by Elita E at SDN I Kalirejo, where no correlation was found between breakfast habits and student achievement. It is suspected that other factors that are more dominant influence learning achievement, such as external factors (environment, teaching quality, and community support) and internal factors (genetics, talent, and intelligence of children). However, it is important to note that the effect of breakfast habits on academic achievement may require

long-term research, because the effects of good nutritional habits, such as regular breakfast, can accumulate over time and may only be seen in terms of cognitive aspects and academic achievement in a longer period (Napitupulu & Millenando, 2019)

However, the results of this study contradict the findings of Napitupulu et al., who conducted a study on students at SD Negeri 1 Karangasem Surakarta. Found a significant relationship between breakfast habits and student learning achievement. The study showed that breakfast habits have a positive effect on academic achievement, with a p-value of 0.045, which means that there is a meaningful association between the two variables. Napitupulu et al. concluded that regular breakfast can improve students' concentration, memory, and learning ability during teaching and learning activities (Napitupulu & Millenando, 2019). The results of this study strengthen the view that nutritional intake in the morning, especially through breakfast, plays an important role in supporting children's cognitive activities, which ultimately impacts their academic achievement (Soheilipour et al., 2019; Christiana et al., 2024).

## 5. CONCLUSION

This study concluded that there was no significant relationship between breakfast habits and academic achievement of 5th grade elementary school students at SDN Pamoyanan, as indicated by the p-value of 0.9740. Although students who regularly eat breakfast tend to have better academic achievement descriptively, statistical analysis did not support a significant relationship. Therefore, although breakfast remains important for general health and well-being, it may not directly affect academic achievement in this particular sample.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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## COMPETING INTERESTS

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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