Available online on 15.06.2023 at http://ajprd.com

Asian Journal of Pharmaceutical Research and Development

Open Access to Pharmaceutical and Medical Research

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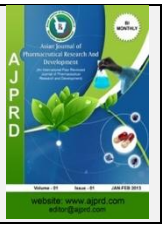

Open Access **Research Article**

How is the Learning Achievement of Elementary School Students?-Breakfast and Study Concentration

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A B S T R A C T

Background: Learning Achievement is a benchmark of someone in achieving success in the academic field, one of the factors that influence it is the concentration of study and breakfast habits. Breakfast is useful to support learning concentration so that it can improve learning achievement. Learning Consentration affects learning achievement, one way to increase learning concentration is by having breakfast. Purpose: This study aims to analyze The Relationship of Breakfast and Study Concentration with Learning Achievement of Grade 5 Students at SD Negeri Pengasinan 03. Method: Analytical research with cross sectional design, the number samples was 57 students and taken by purposive sampling which fulfilled the inclusion and exclusion criteria. Method: Learning Achievement data obtained from the learning outcomes of even semester students. Breakfast data obtained using the food record method for 2 consecutive days, namely on weekends and weekdays. Study Concentration data obtained by the Digit Symbol Test method and using a stopwatch. Results: Data analysis with Chi-Square test. From 57 students, most of them have a breakfast frequency that is not routine (56,1%). High Study Concentration (64,9%) and Good Learning Achievement (80,7%). There is a significant relationship between breakfast and learning concentration (p-value = 0.008), there is no significant relationship between breakfast and learning achievement (p-value = 0.217), there is a significant relationship between learning concentration and learning achievement (p-value = 0.000).

Keywords: Breakfast, Breakfast Frequency, Study Concentration, Learning Achievement.

A R T I C L E I N F O: Received 16 Jan 2023; Review Complete 19 Feb. 2023; Accepted 25 April 2023; Available online 15 June 2023

Cite this article as:

Rachmat M, Fajri AN, How is the Learning Achievement of Elementary School Students?-Breakfast and Study Concentration, Asian Journal of Pharmaceutical Research and Development. 2023; 11(3):12-16. DOI: http://dx.doi.org/10.22270/ajprd.v11i3.1218

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INTRODUCTION

Learning achievement is one of the benchmarks for someone in achieving success in the academic field. In achieving optimal learning achievement there are several factors that influence it, one of which is the concentration of students in the learning process and nutritional intake. To measure and evaluate the level of learning success can be done through learning achievement tests, one of which is with a submative test, namely to improve the teaching and learning process and is taken into account in determining the value of report cards.[1,2]

Many school-age children do not have breakfast, based on 2018 Basic Health Research data, as many as 26% of Indonesian children only consume drinks at breakfast time, either water, tea or milk. Not all children who have breakfast have implemented a healthy and balanced breakfast pattern, only 10.6% have enough energy intake of 20% for breakfast. Based on the results of the study, it can be seen that there are still many school children who do not have breakfast. Therefore, it is important for school children to have breakfast so that daily nutritional needs can be met so that activities at school run optimally. Even though breakfast is useful for supporting children's learning concentration so that it can improve learning achievement, support growth and development as well as various activities at school.[3–5]

Breakfast has an important role for school children, namely as a form of fulfilling nutrition in the morning to carry out daily activities. If you are used to having breakfast, it will affect your ability to concentrate while studying at school. Breakfast is the first food intake that enters the body after waking up in the morning. At breakfast the brain returns to get nutrition. A healthy breakfast must meet at least a quarter of daily nutritional needs, so at least the breakfast menu must

contain sufficient carbohydrates, protein, fat, vitamins, minerals, fiber, and water to help the digestive process, increase energy as well as concentration and memory. Elementary school age children are categorized as still in the stage of development and growth. Therefore, breakfast is very necessary to support its activities. In addition to rapidly developing motor development, elementary school age children are able to think, learn, remember, and communicate. Therefore, to maintain its development, it fulfills a balanced energy and nutritional intake to support its activities.[6–8]

Breakfast contributes 20-25% of the total daily nutritional needs which is done between getting up in the morning at 6 to 9 in the morning. Breakfast habits can optimize children's learning activities at school and other activities carried out by children. Concentration has a large effect on learning. If someone has difficulty concentrating, learning will be in vain because it only wastes energy, time and money. In increasing the concentration of learning can be achieved in various ways, one of which is breakfast. Breakfast has an important role for school children aged 6-12 years, namely to fulfill nutrition in the morning, when children go to school and have very busy activities at school. If you are used to having breakfast, it will affect the best brain intelligence so you can concentrate at school. Measuring concentration can use the digit symbol test, the digit symbol test is one of the psychological tests proposed by David Wescsler in 1955 to measure visual motor coordination which includes accuracy, speed, concentration, short term memory and repetition. This test consists of divided boxes, the top box contains numbers and the bottom box contains symbols. Fill in the box according to the appropriate pair of numbers and symbols. This test takes 90-120 seconds to fill in the 90 boxes tested.[9–12]

The impact of skipping breakfast apart from reducing learning concentration also has an impact on the risk of anemia compared to children who have breakfast habits and without breakfast a person will experience hypoglycemia or below normal glucose levels because lack of glucose is a source of energy for the brain. Glucose contained in breakfast foods plays an important role in the mechanism of one's memory (cognitive) memory, although it does not affect the level of intelligence. This is the result of Simeon and McGregor's research in Sofianita et al which states that the intelligence quotient (IQ) score is higher in children who are used to having breakfast than those who do not have breakfast.[13–15]

METHODS AND MATERIALS

This study uses a cross-sectional design that can be used to estimate a causal relationship and generate specific hypotheses. The data collected in this study included independent, namely breakfast consisting of breakfast frequency and study concentration, while the dependent variable was learning achievement.

This research was conducted at SDN Pengasinan 03 Depok City. Sampling from research conducted by purposive sampling technique. Samples were obtained from populations that met the inclusion criteria of 57 respondents. The research instrument used is the document on the results of even semester report cards for the 2020/2021 academic year for Indonesian Language, Mathematics, Natural Sciences, and Social Studies subjects to measure student achievement; Questionnaire to collect data on the characteristics of the respondents which include gender, age and breakfast; Digital or manual scales to measure body weight and microtoise to measure height; Breakfast food record form for 2 days, 1 day for a weekday description and 1 day for a weekend overview to assess energy intake and nutritional intake for breakfast; Digit Symbol Test to measure student concentration. Data analysis was carried out on two variables that were thought to be related including breakfast data with concentration, breakfast data with learning achievement and learning concentration data with learning achievement with the chi square test.

RESULTSAND DISCUSSION

Table 1: Characteristics of respondents

Characteristics	Frequency	%
Age		
10 years	16	28.1
11 years	27	47.4
12 years	14	24.6
Gender		
Male	29	50.9
Female	28	49.2

Table 1 shows that of the 57 respondents the majority of students were male, namely 50.9% and 11 years old, namely 47.4%

Table 2: Frequency Distribution Based on Breakfast Frequency, Study Concentration and Learning Achievement

Variable	Frequency	%
Breakfast Frequency		
Routinely (≥ 5x/week)	25	43,9
Not routinely (<5x/week)	32	56,1
Study Concentration		
High (≥50)	37	64.9
Low (<50)	20	35.1
Learning Achievement		
Good(≥70)	46	80.7
Poor (<70)	11	19.3

Table 2 shows that of the 57 respondents, the majority, namely 56.1% of students, did not have breakfast regularly. The habit of not having breakfast continuously for a long time will result in reduced nutritional intake and have a bad

impact on intellectual performance, decreased concentration at school and disturbed social performance.[16]Meanwhile, students who have breakfast regularly at 43.9% usually have breakfast at home provided by their parents or parents buy breakfast outside.

Respondents have a concentration of learning that is mostly 64.9% of students have a high concentration of learning. Concentration can be influenced by internal factors in the form of physical health, motivation and others, while external factors in the form of the social environment, facilities and infrastructure. Students who concentrate can be seen from their behavior during the teaching and learning process. Learning concentration can affect students' absorption, in this case learning concentration is closely related to memory or memory in students and plays an important role for students to remember, record, continue, and develop subject matter delivered during the learning process in class.[17,18]

Respondents in the good learning achievement category were 80.7% based on the results of the report cards that passed the Minimum Completeness Criteria (KKM) in the even semester of the 2020/2021 school year. Learning achievement can also be influenced by several factors, namely internal factors in the form of physiological and psychological factors, while external factors in the form of the social environment and facilities and infrastructure. Learning presentation is the maximum result achieved by a person after carrying out a given learning activity based on certain measurements. In this study, learning achievement was measured and obtained from the average results of students' even semester report cards.[19,20]

Table 3: The Relationship between Breakfast and Study Concentration

Breakfast Frequency	**Study Concentration**						p-value
	High		Low		Total		
	f	%	f	%	f	%	
Routinely (≥ 5x/week)	21	56.8	4	20.0	25	43.9	0.008
Not routinely (<5x/week)	16	43.2	16	80.0	32	56.1	
Total	37	100.0	20	100.0	57	100.0	

Based on Table 3, the results obtained show that students with a regular breakfast frequency have a high learning concentration of 56.8% or as many as 21 students out of 25 students. while students with non-routine breakfast frequency have a low learning concentration of 80.0% or as many as 16 students out of 32 students. It can be concluded that students who regularly have breakfast have a higher/better concentration in learning.

The results of the chi square test showed that there was a significant relationship between breakfast frequency and learning concentration, indicated by a p-value = 0.008 or <0.05. These results are comparable or have the same character as Yudha's research, using the chi-square test to obtain a p value = 0.024 or <0.05, it is said that there is a relationship between breakfast habits and learning concentration, the more often children have breakfast the risk of decreasing concentration will also be the higher.[21]This is also comparable to the results of research in Bogor Regency on elementary school children regarding concentration abilities using the digit symbol test in a row showing that there are differences in concentration ability between children who have a regular breakfast frequency and children who do not have breakfast regularly and there is a relationship between breakfast energy intake with the concentration ability of children at school.

Regular breakfast with the type and amount that contains enough energy will stimulate the brain so that it can increase concentration on learning. There is also a relationship between breakfast energy intake and concentration levels using the digit symbol test, because a regular breakfast with the type and amount of breakfast that contains enough energy will stimulate the brain so that it can increase learning concentration. Breakfast that contains protein, fat and carbohydrates is very necessary for children. Protein is a nutrient that functions as a building block for the formation of new nerve cells, including the brain. In relation to the working process of the brain, proteins in the form of amino acids such as glycine, glutamate, tyrosine and tryptophan are needed to form neurotransmitters that carry nerve impulses and influence behavior such as emotions, self-control and learning concentration. It is said that if the intake of protein that enters the body is less, it can cause memory or concentration to decrease.[22,23]

Fat produces the highest energy when compared to carbohydrates and proteins. The results of breaking down fats from food are fatty acids and glycerol. Fat in the body will be oxidized through beta-oxidation metabolism to form triglycerides which will be the body's main fuel reserves. Apart from triglycerides, the results of breaking down other fatty acids, such as ketone bodies, are used as a source of energy in the heart and brain. In the brain ketone bodies are an important source of energy during fasting. All of these energy results will later be used for activities and also thinking, if there is no energy supply from fat intake then in activities and also thinking can decrease.[23]

Carbohydrates in the form of glucose are a good source of protein for the nervous system, brain and nervous tissue are very dependent on glucose because it is needed to meet protein needs so that the availability of glucose must be maintained for the health of the body and brain. Carbohydrates are a source of energy for the body and brain to work optimally. In digestion, carbohydrates are broken down into simple sugars, namely glucose. The brain needs to get sufficient amounts of glucose troops through blood circulation throughout the body, because glucose is very

important for health, makes it easier to concentrate in receiving lessons and as the main source of energy for the brain to be able to work optimally so that students can improve learning achievement at school. In the absence of a supply of carbohydrate intake, the body will become weak and concentrate less in learning so that it can cause a decrease in learning achievement.[24,25]

Table 4: The Relationship between Breakfast and Learning Achievement

Breakfast Frequency	**Learning Achievement**						p-value
	Good(≥70)		Poor (<70)		Total		
	f	%	f	%	f	%	
Routinely (≥ 5x/week)	22	47.8	3	27.3	25	43.9	0.217
Not routinely (<5x/week)	24	52.2	8	72.7	32	56.1	
Total	46	100.0	10	100.0	57	100.0	

Based on table 4 above, the results obtained show that 52.2%, slightly more students have good learning achievement in students who do not regularly have breakfast, compared to 47.8% of students who regularly have breakfast, while 27.3% more Few students had poor academic achievement in students who regularly had breakfast, compared to 72.7% of students who did not regularly have breakfast.

Statistical test results showed a p-value = 0.217 or > 0.05, which means that there is no relationship between breakfast frequency and student achievement. This is comparable or has the same character as Febriyeni A's research which showed p = 0.110 or > 0.05, meaning that there is no relationship between the frequency of breakfast habits and student achievement.[22] This is because there are various factors that affect academic achievement, not only seen from the frequency of breakfast, but also seen from internal factors such as physical health, interests, motivation and external factors such as social environment, infrastructure and economic status.

Table 5: Relationship between Learning Concentration and Learning Achievement

Study Concentration	**Learning Achievement**						p-value
	Good(≥70)		Poor (<70)		Total		
	f	%	f	%	f	%	
High (≥50)	35	76.1	2	18.2	37	35.1	0.000
Low (<50)	11	23.9	9	81.8	20	64.9	
Total	46	100.0	11	100.0	57	100.0	

Based on table 5 above, the results obtained are that 76.1% have good achievement in students who have high learning concentration, compared to 23.9% of students who have low learning concentration. While students whose learning achievement was not good, namely 81.8%, there were more students who had low learning concentration, compared to 18.2% of students who had high learning concentration. Thus it can be concluded that children with high learning concentration will have good learning achievement.

Statistical test results, an analysis showed that there was a significant relationship between learning concentration and student achievement as indicated by the p-value = 0.000 or <0.05. These results are comparable or have the same character as Pratiwi's research (2019) that there is a relationship between learning concentration and learning achievement, meaning that student learning achievement is influenced by the level of student learning concentration.[26] However, these results are not comparable or do not have the same character as the research of Febriyeni which states that there is no relationship between learning concentration and learning achievement, because student achievement is influenced by several variables that are not examined, for example internal factors such as interest and motivation as well as from external factors such as the social environment and infrastructure that can be variables that affect learning achievement.[22] That the concentration of learning is the concentration of attention in the process of changing behavior which is expressed in the form of mastery, use and evaluation of attitudes and values, basic knowledge and skills contained in various fields of study.

Based on research conducted by several education experts, the low quality of student achievement is largely due to the weak ability of students to be able to concentrate when learning. Even though the optimal results of student learning are very dependent on the intensity of students' abilities to concentrate on learning. It can be concluded that concentration is one thing that is absolutely needed by students in understanding the subject matter. Students who can concentrate for a long time will certainly capture more of the subject matter so that when an evaluation or test is carried out, it is likely that their achievement or learning outcomes will be better than students who can only concentrate for a short period of time. So it is very clear that concentration can have an effect on learning achievement.

CONCLUSION

Based on the results of the study, it was found that there was a significant relationship between breakfast and learning concentration (p-value = 0.008), there is no significant relationship between breakfast and learning achievement (p-value= 0.217), there is a significant relationship between learning concentration and learning achievement (p-value = 0.000).It is recommended that parents of students get used to their children consuming breakfast regularly, as well as consuming balanced and varied foods to increase their child's appetite.

ACKNOWLEDGEMENTS

Director of the Health Polytechnic of Jakarta II and Head of the Department of Nutrition Health Polytechnic of Jakarta II

CONFLICTOFINTEREST

The authors declare that they have no conflictinterests.

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