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The Relationship between Breakfast Habits, Knowledge of Nutritional Status and Learning Achievement of Class VII Students of SMPN 02 Banjar Agung, Lampung

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Abstract

Academic achievement and cognitive learning can both be enhanced by eating breakfast. Children who are well-informed about nutrition will be able to choose foods that are high in nutrients and health. The purpose of this study is to ascertain the connection between learning achievement, awareness of nutritional status, and breakfast routines. This study's methodology combines a cross-sectional approach with descriptive analytics. The study was carried out in June and July of 2022. 120 class VII students from SMPN 02 Banjar Agung served as the research's samples, and they were chosen based on inclusion and exclusion standards. Interviews are used to gather information on breakfast habits, and final report cards are gathered to gather information on academic accomplishment. According to this study, 89 people (74.2%) had good learning outcomes and 100 people (80.0%) had healthy breakfast habits. According to the Chi Square test, there is a p-value of 0.040 ($p < 0.05$) for the association between breakfast and nutritional status knowledge. The Chi Square test yielded a p value of 0.000 ($p < 0.05$) for the correlation between breakfast and learning achievement. Breakfast habits and nutritional awareness are related, as is the relationship between breakfast habits and academic accomplishment in students. Parents' and teachers' roles are crucial in helping students adjust to eating breakfast. In addition, socializing within and outside of the classroom is necessary to raise kids' understanding of the value of breakfast.

Keywords: Breakfast, Nutritional Status, Learning Achievement

1. Introduction

Children are the nation's long-term investment as quality human resources that are useful for society. The quality of public health needs to be improved by improving nutrition, one of which is breakfast activities1 (Rani et al., 2021). So that school children can carry out their learning process well, children's energy and nutritional intake is obtained from breakfast. In the morning, children need nutritious food as a source of energy so that children can carry out daily activities optimally (Tamitha et al., 2021). Student learning achievement is influenced by various factors, including concentration. Children's grades tend to be low, an indicator of the cause is that students' concentration levels need to be improved. Study concentration has a strong effect on learning. The ability to learn with high concentration plays a role in increasing learning achievement (ALBashtawy, 2017).

Breakfast energizes the brain and improves the learning process at school. The effect of a lack of glucose is hypoglycemia which is followed by a decrease in the child's concentration. A gap of 10 to 12 hours between dinner and breakfast causes blood sugar to drop which can affect cognitive performance. Apart from that, a decrease in memory and thinking power will disrupt the brain's ability in daily activities (Liu et al, 2021). According to the results of a food consumption survey in the framework of the 2010 Riskesdas basic health study, the majority of children do not have the habit of consuming breakfast that has good or healthy nutritional content. In Indonesia, the prevalence of school children who do not eat breakfast is 41.2% -54.5%. A child who is malnourished, of course, makes them weak quickly, can cause pain, which ultimately results in frequent truancy, difficulty following and understanding lessons, affecting learning achievement results (Riset Kesehatan Dasar, 2010). Based on the difficulties highlighted, researchers are interested in the association between breakfast, nutritional status, and learning achievement among students at SMPN 2 Banjar Agung, Lampung.

2. Methods

This study is a descriptive analytical study with a cross-sectional design. The study was conducted at SMPN 02 Banjar Agung, Lampung. Permission to conduct the research was granted by this school. The study was conducted in 2022 in June and July. The participants in this study were pupils in class VII at SMPN 02 Banjar Agung, Lampung. There will be 120 pupils enrolled in class VII at SMPN 02 Banjar Agung in 2022. 120 students in class VII at SMPN 02 Banjar Agung met the inclusion criteria for this study and agreed to participate as respondents by signing an informed consent form prior to data collection. The rationale behind selecting class VII as the research subject is because, in contrast to other classes, class VII has a wide range of breakfast- and nutrition-related concerns, so answers to these issues are needed.

The data collection method uses a questionnaire to find out information about identity (age, gender), level of knowledge about nutrition and breakfast habits of respondents. Nutritional status is determined by assessing students' height and weight. As demonstrated by report card statistics, student learning achievement data is the outcome of student efforts made through mastery of information, habits, skills, and attitudes after adhering to the teaching and learning process. Using the Cronbach's Alpha method, the questionnaire's validity and reliability were assessed among respondents; the result was a score of 0.70.

Method of assessing knowledge of nutritional status, breakfast, learning achievement is calculated using scores obtained from answers to a questionnaire containing 11 questions, correct score = 1, incorrect score = 0. Nutritional knowledge is categorized: Poor: <75% correct answers, medium good category: >76% correct answers. The breakfast habit is the habit of consuming food in the morning around 06.00 – 9.00. Breakfast habits are measured using scores obtained from answers to a questionnaire containing 11 questions regarding breakfast habits. Breakfast habits are categorized: Bad: <75% correct answers, while Good category: >76%

correct answers. Bad breakfast habits include choosing foods that do not suit the child's daily nutrition or not eating breakfast. Conversely, selecting wholesome and reliable morning meals is what establishes healthy breakfast routines.

3. Result and Discussion

The outcomes of the studies had been acquired from the facts series technique to records evaluation. in the records evaluation technique, there are manual of completion steps and the process of constructing graphs from regression equations to acquire *Hurst* exponent values and fractal dimensions is finished with the help of the Matlab programming language.

The purpose of the study, which was carried out at SMPN 02 Banjar Agung, Lampung, was to ascertain the association between breakfast, students' nutritional state, and their learning achievement in class VII. Information gathered via a survey employing simple random sampling, to which 120 students responded in total. Table 1 shows the gender distribution of the 120 respondents, who were SMPN 02 Banjar Agung class VII students: 50% were male and 50% were female.

Table 1. Characteristics of Respondents by Gender

Gender	Frequency	Percent
Male	60	50.0
Female	60	50.0
Total	120	100.0

According to Table 1, there were 50 males and 50 females among 120 responders from class VII pupils at SMPN 02 Banjar Agung.

Table 2. Characteristics of Respondents based on Age

Age	Frequency	Percent

12	85	70.8
13	32	26.7
14	3	2.5
Total	120	100.0

According to Table 2, Characteristics of Respondents based on Age, out of the 120 respondents who were SMPN 02 Banjar Agung class VII students, the majority were students in class VII, aged 12 (70.8%), 13 (26.7%), and 14 (2.5%).

Table 3. Frequency Distribution of Learning Achievement

Learning Achievement	Frequency	Percent
Moderate	31	25.8
Good	89	74.2
Total	120	100.0

According to the results in Table 3. Frequency Distribution of Learning Achievement, it was found that there were 31 students (25.8%) in the moderate category in learning achievement and around 89 students in the good category in learning achievement (74.2%).

Table 4. Frequency Distribution of Breakfast

Breakfast Habits	Frequency	Percent
Bad (no breakfast)	20	20.0
Good	100	80.0
Total	120	100.0

According to the research findings, Table 4 shows the distribution of breakfast. Twenty students (20.0%) reported having poor breakfast habits or not eating at all, while eighty students (80.0%) reported having good breakfast habits.

Table 5. Frequency Distribution of Knowledge of Nutritional Status

Nutrition Knowledge	Frequency	Percent
Poor	26	21.7
Good	94	78.3
Total	120	100.0

Table 5 presents the frequency distribution of knowledge of nutritional status. The research findings show that 26 individuals (21.7%) had poor nutritional knowledge and 94 individuals (78.3%) had strong nutritional knowledge.

Table 6. Relationship between Breakfast Habits and Knowledge of Nutritional Status

Breakfast Habits	Nutritional Knowledge		Total	p value
	Poor	Good		
Bad (no breakfast)	4	13	17	0,040
Good	22	81	103	

The Chi-Square test yielded a p-value of 0.040 ($p<0.05$) for the link between breakfast behaviors and nutritional awareness (refer to Table 6). This indicates that among class VII students at SMPN 02 Banjar Agung, Lampung, there is a connection between breakfast and nutritional understanding.

Table 7 Relationship between Breakfast Habits and Learning Achievement

Breakfast Habit	Learning Achievement		Total	p value
	Moderate	Good		
Bad (no breakfast)	17	3	20	0,000

Good	14	86	100

The research analysis results indicate that a p-value of 0.000 ($p<0.05$) for the Chi-Square test was achieved to determine the association between learning achievement and breakfast. This indicates that for kids in class VII at SMPN 02 Banjar Agung, Lampung, there is a correlation between breakfast and academic progress.

Eating habits are the intentional and repetitive ways in which a person eats, including the types of food eaten, the quantities consumed, and the timing of eating, in response to cultural and societal factors. For the sake of the health of children, it is crucial to comprehend what they eat. Children's eating habits may be influenced by a number of variables, including the home and social environments—settings where beliefs, knowledge, and eating habits are formed. However, it appears that children are most impacted by parental dietary patterns since parents set the food environment in the home, shape a child's perspective on food, and help them begin to develop their own eating habits and preferences (Mahmood, 2021).

In the Guidelines for Balanced Nutrition, it is stated that balanced nutrition is an absolute requirement or important thing in creating a generation or nation that is healthy, intelligent, accomplished and superior. One of them is fulfilling the need for breakfast intake (P2PTM Kemenkes, 2019).

Breakfast is the first meal of the day and should be consumed no later than 10:00, ideally with 20–25% of the recommended daily allowance of energy. The arcuate nucleus (ARC) of the hypothalamus, which controls all aspects of energy balance through peripheral hormonal interactions and metabolic signals, is responsible for controlling hunger and food intake. A peptide called ghrelin is created in the stomach and acts as a hunger-inducing hormone by altering how the central nervous system receives information about food intake. The antagonistic relationship between ghrelin and leptin's inhibitory effect on the production of hypothalamic neuropeptide Y (NPY) is connected. A number of advantages are linked to eating breakfast, such as better mental health in kids, better nutrition, decreased body weight, regulation of the daily caloric intake, and a healthy habit (Rani et al., 2021).

The research results show that most of them have good nutritional knowledge. Generally, if children have knowledge about good nutrition, they will be interested in determining which foods to consume that are high in nutrition. Awareness of female students is an important factor in developing knowledge to pay attention to nutrition. This is obtained from obtaining information from various media, both from the family, school and and the community where children are active. This development of knowledge is obtained because there is awareness among students so that their bodies are protected from various diseases (Octaviani et al.,2020). The research found that 103 respondents (85.8%) had breakfast habits and good nutritional knowledge. Based on statistical study analysis, the Chi-Square test yielded a p-value of 0.040 ($p<0.05$) for the association between breakfast habits and nutritional awareness. Breakfast

habits and nutritional awareness are significantly correlated. This consistent research conducted at the State Elementary School in Pondok Labu, Jakarta shows that the breakfast habit of the percentage of respondents is higher and the level of knowledge of nutritional status is good (62.1%) (Intania Sofianita et al., 2015).

Nutritional knowledge is a person's ability to remember the nutritional content of food and the uses of these nutrients in the body. Nutritional knowledge will influence the eating habits or eating behavior of a community. Nutritional knowledge also provides information related to nutrition and health. This shows that nutritional knowledge provided to school-aged children is important to change their attitudes and behavior so that they want to getting used to eating breakfast every day, nutritional knowledge regarding the benefits of breakfast, the impact of skipping breakfast and healthy breakfast menus that support school children's activities every day ((Triches, 2005) (Dewi, 2013).

Most students who have a poor level of knowledge will tend to have unhealthy eating habits. They think that just drinking water/coffee/tea is considered breakfast, just eating a small piece of cake is considered breakfast, eating at 10 am during school break is considered breakfast. Apart from that, there are still many who don't know the benefits of breakfast (Basuki J, 2019). Knowledge of healthy breakfast is needed to build relationships with healthy food consumption. These include: level of family knowledge, ever having been on a diet, time needed for breakfast, and knowing the amount of fruit that should be eaten (Córdoba CLG, et al., 2014). Food consumption occurs because there is motivation (needs, drives, desires) which is determined by various cognitive processes which include perception, memory, thinking, deciding to act and factors directly related to cognitive are children's knowledge and attitudes towards food (Sofianita, 2015).

Food consumed at breakfast is not only filling but also nutritionally complete and balanced. A good breakfast that meets nutritional criteria is to supply carbohydrates (55-65%), protein (12-15%), fat (24-30%) and vitamins and minerals which can be obtained from vegetables and fruit (Mariza, Kusumastuti, 2013).

Blood sugar levels obtained from breakfast will be converted into energy through metabolic processes. The results of this metabolism will be used by body cells to carry out their functions. So that in the end the body can carry out various activities ranging from thinking, working, running to carrying out other daily activities. At school age, children need a lot of nutrition to grow and develop according to their developmental stage. The nutrients obtained at breakfast also have an important role in children's growth and development. The blood sugar produced will also be used by body cells to grow and develop according to the child's developmental stage (Masrikhiyah, Octora, 2020).

Knowledge of healthy breakfasts is needed to build relationships with healthy breakfast consumption. These include: level of family knowledge, ever having been on a diet, time needed for breakfast, and knowing the amount of fruit that should be eaten. This requires carrying out nutritional education by a nutritionist regarding the importance of breakfast. The student belongs to a family with a low cultural level, attends a state-supported school, does not

have the habit of reading, has been on a diet at least once, eats less than three times per day, no breakfast and not knowing the amount of fruit to eat each day (Córdoba et al., 2014).

Respondents with breakfast habits in the bad category numbered 20 children with 17 children achieving moderately while 3 children performed well. The breakfast habit in the good category is 100 children with 14 students' learning achievement in the moderate category, while the other 86 children are in the good category in terms of student learning achievement. The correlation between learning achievement and breakfast habits can be determined using the Chi-Square test, which yielded a value of $p = 0.00$ ($p<0.05$) based on statistical study analysis conclusions. Breakfast habits and academic accomplishment are related for students in class VII at SMPN 02 Banjar Agung, Lampung. This study supports the findings of Nurwijayanti and Riska Marvelia's research, which found a connection between breakfast consumption and academic success (Nurwijayanti, 2018), (Marvelia, 2021).

Breakfast is an important meal. Food consumed in the morning is responsible for supplying blood sugar levels. After someone has spent hours without eating, in the morning, blood sugar levels in the body are automatically low. Even though glucose in the blood is the main source of energy for the brain to work optimally. Therefore, breakfast functions to restore energy reserves and blood sugar levels. In the morning, children's activities require a lot of movement, so children need energy to learn and interact with their environment (Masrikhiyah, Octora, 2020).

A child's nutritional status may be influenced by their breakfast eating habits. When the body gets adequate nutrients that are utilised effectively, it can support general health, brain development, and physical growth. This is known as optimal or good nutritional status. So if adequate nutrition is not met, it will affect nutritional status and cause stunted growth and development of the body. Malnutrition causes children to tire easily, not be able to carry out long physical activities, and unable to think and participate fully in the learning process (Rahmiwati, 2014).

Students who have poor nutritional status or malnutrition will cause metabolic changes in children which have an impact on children's cognitive abilities and brain abilities. This is because a lack of intake in children, such as a lack of energy, protein, micronutrients, will have an effect on the function of the hippocampus and cortex in forming and storing memories. Poor nutritional status causes imperfect cognitive abilities so that learning abilities are disrupted which impacts on student learning achievement. (Masrikhiyah, Octora, 2020)

Breakfast affects school performance because breakfast increases glucose absorption in the brain. Increasing glucose levels from food intake is the main source of fuel for the brain and supports brain performance, especially those related to improving memory aspects and concentrating at school. Breakfast intake is also associated with increased motivation. Therefore, if children skip breakfast, they arrive at school hungry, distracted, and don't have much energy, then their emotional and cognitive engagement is reduced, if they skip breakfast. Over the long term, through improving the overall quality of children's diets, breakfast may impact school performance through the promotion of long-term overall health, which has been found to be associated with school performance.

More precisely, socioeconomic status influences breakfast and achievement motivation on academic achievement. Greater education levels enable parents to ensure that their children receive adequate nutrition and a sense of family love by making breakfast more frequently and more effectively than lower education levels. Students are encouraged to improve their scores because their parents' occupations have an impact on their career choices. Students who reside in homes with superior amenities and quality perform better academically. A family's level of concern for their children's breakfast behavior increases with increasing economic position (Gao et al., 2021).

4. Conclusion

Breakfast habits have been linked to both nutritional understanding and student learning achievement. Parents' and teachers' roles are crucial in helping students adjust to eating breakfast. In addition, socializing within and outside of the classroom is necessary to raise kids' understanding of the value of breakfast.

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