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THE EFFECT OF BREAKFAST EDUCATION USING THE UNO STACKO ON THE LEVEL OF KNOWLEDGE AND ATTITUDES OF ELEMENTARY SCHOOL CHILDREN

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Abstract
Breakfast is a source of energy needed to carry out activities at school. Based on consumption data analysis of 35,000 school-aged children in Indonesia, it shows that almost half (44.6%) of children who eat breakfast only get less than (15%) energy intake. of the nutritional needs that should be met (15-30%) in a day. The aim of this research was to determine the effect of breakfast education using the uno stacko on the level of knowledge and attitudes of West Bangkala State 9 elementary school children. This type of research is quasi experimental with a one group pre-test and post-test design in West Bangkala 9th state elementary school. The sampling method used a total sampling technique with all 27 class V students and 33 class VI students. The variables in this research are knowledge and attitudes about breakfast, collected by filling out a questionnaire. Data analysis uses statistical tests, namely the Wilcoxon test. The results of the research revealed the level of knowledge of the sample before being given education (50.9%), the level of knowledge of the sample after being given education (100%). Attitudes before being given education (69.1%) and attitude levels after being given education (100%). The average knowledge score before education (53.45%) and after education (79.45%). The average attitude value before education (62.54) and after education (78.90%). Statistical analysis shows that there is a difference in knowledge before and after being given education (p=0.000) and statistical analysis shows that there is a difference in attitudes before and after being given education (p=0.000). It is recommended that for further research, further research can be carried out using uno stacko in the target group, namely children and teenagers.

Introduction

Breakfast consumption is widely considered important for children's health and well-being, with several studies highlighting its significance. Research indicates that breakfast provides essential nutrients and contributes to overall diet quality in children and

adolescents (1). The impact of skipping breakfast on children's health is not entirely straightforward. While some studies suggest that breakfast skipping may increase the risk of overweight and obesity (2), others have found conflicting results. For instance, a meta-analysis of longitudinal studies in adults showed only minimal evidence that breakfast skipping might lead to weight gain (3). An analysis of breakfast consumption data from 35,000 Indonesian school-aged children revealed that nearly half (44.6%) of breakfast consumers obtained less than 15% of their daily energy requirements, falling short of the recommended 15-30% (4). Research conducted by Lusiana (2020) found that 30.3% of children who did not habitually have breakfast were underweight (89.2%).

Children aged 6-12 years are elementary school children who are undergoing a phase of growth and development. During this period, nutritional balance is very important to meet the nutritional needs of their bodies; the higher the level of physical activity, the more energy will be needed (6). Nutrition plays a crucial role in supporting cognitive function, physical growth, and overall health during formative years. Proper nutrition is essential for normal brain and neurocognitive development, with failure to optimize neurodevelopment early in life having profound long-term implications for mental health and quality of life (7).

The problem of malnutrition in Indonesia, based on the results of the 2022 SSGI, shows that nutritional status in Indonesia has a stunting prevalence of 21.6%, children experiencing wasting of 7.7%, children classified as underweight of 17.1%, and children classified as overweight of 3.5%. Based on a nutritional status survey in South Sulawesi, 27.7% of children experienced stunting, 8.3% were classified as wasting, 21.1% were classified as underweight, and 4.2% were classified as overweight. The prevalence of stunting in the Jeneponto district was 39.8%; 8.1% of children were classified as wasting, 29.2% were classified as underweight, and 1.1% were classified as overweight. These figures highlight the pressing need for effective nutritional interventions targeting school-aged children.

Given these challenges, providing nutrition education tailored to children's interests is essential. A study conducted by Manjilala *et al* (2023) demonstrated that nutrition education using brochures significantly improved nutritional knowledge. The average knowledge score increased from 59.75 before the education intervention to 78.75 after the intervention. Educational using video media on optimizing toddler nutrition effectively increases the knowledge of mothers of toddlers in Ngemplak, Sleman Yogyakarta. Before the intervention, the average knowledge score was 65.40 ± 7.908, which significantly increased to 90.32 ± 6.394 after the educational media was provided (9). Despite the effectiveness of brochures and video, children may find traditional methods less engaging. Therefore, incorporating interactive and enjoyable approaches, such as games, can enhance learning outcomes.

Nutrition education about breakfast can be delivered using engaging methods, one of which is edutainment. Edutainment is a learning concept that is enjoyable and stimulates children to explore and imagine (10). Game-based methods are highly suitable for providing nutrition education in elementary schools, especially regarding the importance of breakfast. Given that this age group is naturally inclined towards play delivering knowledge through games is highly effective in enhancing children's understanding (11). One engaging game is Uno Stacko. Uno stack is a fun game that is equally beneficial in helping children socialize with their peers, fostering their enthusiasm for learning, and ultimately maximizing learning outcomes (Utami and Kasiyati, 2020). Based on the background above, the researcher is interested in conducting a study to determine the effect of breakfast education using Uno stack games on the knowledge and attitude levels of elementary school students at SDN 9 Bangkala Barat.

Based on the background above, this study aims to address the gap in research by exploring the impact of breakfast education using the Uno stacko game on the knowledge and attitudes of elementary school students at SDN 9 Bangkala Barat. Unlike prior studies that focus solely on traditional educational tools, this study leverages an interactive, game-based approach to enhance children's understanding of nutrition and foster positive attitudes towards breakfast consumption.

Materials and Methods

This research is a quasi-experimental study with a one-group pre-test and post-test design. This design was chosen to evaluate the effect of an intervention within the same group of participants, allowing researchers to measure changes in knowledge and attitudes before and after the intervention. The study was conducted over two weeks at State Elementary School 9 Bangkala Barat in Jeneponto. The duration included an introductory session, implementation of the intervention, and post-test data collection. The intervention session and assessments were completed one day per class to minimize disruptions to the school schedule.

The study involved 60 students, comprising the remaining students from grades 5 and 6, using a total sampling technique. However, five students from Grade 5 were absent during the research. These students were selected from State Elementary School 9 Bangkala Barat in Jeneponto. The intervention involved nutrition education using the Uno Stacko game, adapted for educational purposes. Each game block contained a question or task related to breakfast and nutrition. Students participated in the game in small groups, fostering engagement and collaboration. Game sessions lasted approximately 30 minutes per group.

Data collection utilized a validated questionnaire consisting of two sections: knowledge and attitude. The knowledge section comprised 10 multiple-choice questions

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with one correct answer each. Each correct response was scored 1, while incorrect answers were scored 0. The attitude section consisted of 10 statements rated on a 3-point Likert scale (Agree, Neutral, Disagree). Favourable responses scored 1, and unfavourable responses scored 0. The questionnaires were reviewed by a panel of experts and piloted on a separate group of students to ensure clarity and reliability. Knowledge and attitude scores were calculated as percentages. The correct answers were divided by the maximum possible score (10) and multiplied by 100% for knowledge. The number of favourable responses was similarly converted into a percentage for attitude.

Data analysis was performed using the Wilcoxon Signed-Rank Test to evaluate pre-test and post-test score changes. This non-parametric test was chosen because the data did not meet the normality assumption and is well-suited for paired sample comparisons. Statistical analyses were conducted using SPSS version 26, with a significance level set at $p < 0.05$. By adopting this structured methodology, the study aimed to provide robust evidence of the effectiveness of the Uno Stacko game in improving students' knowledge and attitudes towards breakfast

Results

Table 1. Characteristics of Respondents

Characteristic	Category	Frequency (n)	Percentage (%)
Grade Level	Grade 5	22	40
	Grade 6	33	60
Gender	Female	34	61.8
	Male	21	38.2
Mother's job	Housewife	34	61.8
	Government employees	7	12.7
	Self-employed	14	25.5
Father Jobs	Farmer	28	50.9
	Government employees	10	18.2
	Self-employed	17	30.9
Total		**55**	**100**

Table 1 presents the characteristics of respondents involved in the study. Regarding grade level, 22 students (40%) were from Grade 5, while the remaining 33 (60%) were from Grade 6. Regarding gender, most respondents were female, totalling 34 individuals (61.8%). The data on parental occupations indicate that most fathers worked as farmers (28 individuals, 50.9%), while most mothers were housewives (34 individuals, 61.8%).

Table 2. Distribution of Knowledge and Attitudes Before and After Education

Variable	Category	Before		After	
		n	%	n	%

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Knowledge	Good	28	50.9	55	100
Attitude	Positive	38	69.1	55	100
Total		**55**			**100**

Table 2 describes the distribution of respondents' knowledge and attitudes towards breakfast before and after the intervention. Before the intervention, most respondents had good knowledge, with 28 individuals (50.9%). After receiving nutrition education using Uno Stacko, all respondents (100%) improved their knowledge to the good category. Regarding attitudes, before the intervention, most respondents (38 individuals, 69.1%) displayed positive attitudes towards breakfast. After the intervention, all respondents (100%) demonstrated a positive shift in attitude.

Table 3. Effect of Nutrition Education on Knowledge and Attitudes

Variable	Pre_Test Score (Mean ± SD)	Post-Test Score (Mean ± SD)	p-value (Wilcoxon Test)
Knowledge	53.45 10.12	79.45 8.65	0.000
Attitude	62.54 9.87	78.90 7.23	0.000

Table 3 shows the statistical analysis results of the impact of nutrition education on respondents' knowledge and attitudes toward breakfast. The average knowledge score increased from 53.45 before the intervention to 79.45 after. Statistical analysis using the Wilcoxon Signed-Rank Test revealed a significant difference, with a p-value of 0.000. A similar trend was observed in respondents' attitudes, where the average attitude score increased from 62.54 to 78.90 after the intervention. The Wilcoxon test also showed significant results (p = 0.000). These findings indicate that nutrition education through the Uno Stacko game significantly improved respondents' knowledge and attitudes towards breakfast.

DISCUSSION

Nutrition education is a process that shares the same components as the general education process. Healthcare providers or anyone who seeks to influence individuals or groups in the community can act as educators. Nutrition education aims to promote positive behavioural changes related to food and nutrition. One such behavioural change is a change in the knowledge domain. Knowledge encompasses an individual's ability to name, define, and state what they know after receiving nutrition education (12). The research results showed that 27 students (49.1%) had inadequate knowledge before receiving nutrition education, and 28 students (50.9%) had good knowledge. After receiving nutrition education, all 55 students (100%) had good knowledge, and none had inadequate knowledge. This significant improvement was attributed to the effectiveness of nutrition

education using Uno Stacko. The Wilcoxon test yielded a p-value of 0.000 ($\alpha < 0.05$), supporting the alternative hypothesis (Ha) and rejecting the null hypothesis (Ho). This indicates that Uno stack nutrition education significantly influenced the sample's knowledge change.

The Uno stack-based nutrition education was delivered over one day and rotated between two classrooms. A 15-minute pre-test and a 15-minute nutrition education session were administered using Uno stacko. This enjoyable learning environment significantly enhanced students' comprehension and retention of the material. The enthusiasm of the students for the Uno stacko activity was evident. They were highly engaged and excited, especially when it was their turn to arrange the stackos, read them aloud to their group members, and then place them on the tower. The education also included discussions and question-and-answer sessions. As supported by Hisyam Zaini and Aryani (2005), "giving questions and getting answers" effectively engages students in reviewing the material. This strategy is particularly suitable for the end of a session, serving as a 15-minute summary of all the material covered.

Mechanistically, the effectiveness of the Uno Stacko game in improving knowledge and attitudes may be attributed to its interactive and gamified nature. Game elements can enhance learning experiences by increasing motivation, engagement, and positive affect. Studies have shown that gamification can prevent positive affect from dropping over the course of a task and reduce motivational conflict and subjective effort experienced (13). Additionally, game-based learning environments have been found to activate brain areas associated with emotion, reward processing, and attention, potentially promoting more efficient learning (14).

Conclusion

Nutrition education using the Uno Stacko game significantly improved breakfast knowledge and attitudes among elementary school students. Before the intervention, only 50.9% of respondents had good knowledge, and 69.1% had positive attitudes. Post-intervention, 100% of students demonstrated both good knowledge and positive attitudes, highlighting the effectiveness of interactive, play-based learning in promoting healthy habits. This study underscores the value of integrating engaging educational tools into school nutrition programs. While the findings are promising, the limited sample size and short intervention duration suggest future research should focus on larger populations and long-term impacts. Schools are encouraged to adopt similar innovative methods to enhance students' nutritional behaviors effectively.

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