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Let's Choose Healthy Snacks! Increasing Knowledge of Elementary School Children with Edutainment

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ABSTRACT

Background: Children's snack habits in elementary school are often not supported by a proper understanding of healthy food choices, so they prefer foods high in sugar, salt, and fat. The lack of interesting, appropriate nutritional information for children leaves their knowledge of healthy snacks still very limited. To overcome this problem, the edutainment method that combines education and entertainment can be an effective solution. With fun ways like games or interactive stories, children can more easily understand the importance of choosing healthy snacks. This study aimed to determine the influence of edutainment on elementary school children's knowledge of selecting healthy snacks. **Methods:** This study used a pre-experiment research design with a one-group pretest-posttest design. This research was carried out on May 17-June 03, 2024, at SD Muhammadiyah 1 Palu in the working area of the Kamonji Health Center. The population of this study consists of all 3rd-grade students, totaling 20 participants. The sampling method uses total sampling. The questionnaire contains 10 statements, and the scale used is Guttman's. The edutainment method is presented as an animated video embedded in the game. An animated video containing a collection of images or cartoons, lasting 4 minutes 36 seconds, is provided on selecting healthy snacks, including definitions, functions, sources, impacts, and criteria for choosing healthy snacks. The analysis of this study uses *the Wilcoxon test*. **Results:** The results of the univariate analysis showed that pretest student knowledge was good at 5.0%, fair at 15.0%, and less than 80.0%. After the edutainment method was carried out, the students' knowledge increased to either 60.0% and 40.0% adequate. The edutainment intervention was implemented, with posttest results showing good knowledge at 60% and 40.0%. The Wilcoxon test was negative, rank 0, positive, rank 20, and ties 0 p-value was $0.001 < 0.05$. **Conclusion:** The edutainment method increases students' knowledge about selecting healthy snacks at SD Muhammadiyah 1 Palu. It is hoped that homeroom teachers can motivate students to further improve the habit of choosing healthy snacks with more interesting learning methods, such as *Edutainment*, which is learning that is inserted with games to make the learning process more fun.



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INTRODUCTION

Health from an early age is one of the most important efforts in developing productive, high-quality human resources in the future (Ade Ilia Wahyu Nur'aini, 2019). The optimal growth and development of school-age children depend on the quality and quantity of their nutrition. In general, elementary school-age kids prefer snacks to heavy meals (Devriany, 2021). Improper

consumption of snacks can negatively impact children (Widyastuti, 2021). The habit of consuming snacks is part of the daily life of elementary school-age children. Unfortunately, not all of the snacks they choose are healthy. Snacks high in sugar, salt, and fat are often the top choice because of their appealing flavor and ease of access. If consumed excessively and continuously, unhealthy snacks can have a negative impact on children's health, such as the risk of obesity, metabolic disorders, and decreased study concentration (Fauziah et al., 2023; Santi & Candra, 2022). On the other hand, children's understanding of the importance of choosing healthy snacks is still limited. Factors such as the lack of age-appropriate nutrition education and less attractive information delivery methods are obstacles in improving children's nutrition knowledge. Therefore, it takes a creative and fun educational approach to reach them effectively (Syam et al., 2018).

The negative impact caused by substances contained in school snacks can cause acute reactions in the child's body in the form of cough, diarrhea, allergies, iron deficiency, difficulty defecating or even causing poisoning and growth disorders such as stunting (Br. Purba et al., 2022). The prevalence of stunting in children aged 6-12 years is still high, at 34.6%. The high prevalence of stunting, this shows that there is a risk of disturbed learning concentration for school-age children (Pratiwi Hartono et al., 2019).

Data from the Central Sulawesi Provincial Health Office in 2022 related to Extraordinary Events (KLB). An Extraordinary Disease Incident is the emergence or increase in morbidity/mortality events that are epidemiologically significant in an area over a certain period of time and are situations that lead to an outbreak. Based on data from Central Sulawesi Province, food poisoning cases occurred 4 times. Other diseases, such as diarrhea 8 times, PD3I 2 times, vector-based diseases 3 times and zoonotic diseases 1 time (Dinas Kesehatan Provinsi Sulawesi Tengah, 2022). Based on data from the Palu City Health Office regarding the number of children who experience one of the effects of accidental snacking, namely diarrhea, in the work area of UPTD Kamonji Puskesmas (Dinas Kesehatan Kota Palu, 2021). The results of the initial data survey conducted by the researcher through interviews with UPTD Kamonji Puskesmas indicated that SD Muhammadiyah 1 Palu has a habit of carelessly snacking because it has never been educated on choosing healthy snacks.

Seeing that the percentage of snack consumption in elementary school children is still quite high, it requires the cooperation of various sectors to reduce this percentage (Makita, 2021). One way that can be done is in the form of providing education that can help improve children's knowledge (Lonto et al., 2019; Setiawati et al., 2024). Education can be delivered through engaging methods, one of which is edutainment. The edutainment method is a method that can make the learning atmosphere fun, making children not feel like they are learning, because learning is designed by inserting entertainment and play activities (Intan et al., 2020). A happy atmosphere will affect the way the brain processes, stores, and retrieves information easily, which can be provided by playing games, *role-playing*, demonstrations or using media (Sang et al., 2018). The edutainment method combines education and entertainment as an innovative solution for conveying nutritional information to children. With interactive and fun approaches such as games, animations, or picture stories, children can more easily understand and remember important messages about healthy eating (Suwondo, 2022).

This study updates *the edutainment method* by utilizing media in the form of animated videos (Habib et al., 2019). With animation elements designed with the theme of children can clearly depict the impact of careless snacking, animated videos are a combination of moving audio-visual media, audio-visual media rely on the senses of hearing and sight, elementary school children generally learn 50% of what they hear and see, so that children better understand the lessons of what they see and hear so this method is very suitable for elementary school children (Mardiyah et al., 2022; Ramadhani & Kurniasari, 2022). This study aims to determine the influence of edutainment on elementary school children's knowledge of selecting healthy snacks at SD Muhammadiyah 1, Palu.

METHODS

This study uses a pre-experimental, one-group, pretest-posttest design with a questionnaire. The research was conducted from May 17 to June 03, 2024, at SD Muhammadiyah 1 Palu, the working area of the Kamonji Health Center. This research has also received approval from the Research Ethics Committee of the Palu Ministry of Health Polytechnic, with NO: 001246/KEPK POLTEKKES KEMENKES PALU/2024. The population of this study consists of all 3rd-grade students, totaling 20 participants. The sampling method is a total sampling. The measurement of student knowledge is categorized as good, sufficient, and insufficient (Pakpahan et al., 2021).

The knowledge questionnaire contains 10 statements on the Guttman scale (True/False). Before being used in the study, the questionnaire was tested for validity and reliability through a pre-test (limited trial) with a number of respondents who had characteristics similar to those of the study subjects. The validity test is carried out to ensure that each question item measures the aspect in question, while the reliability test assesses the consistency of the answers. The test results showed that most of the questionnaire items were valid and reliable, making them suitable for use in the study. The edutainment method is presented as an animated video embedded in the game. Animated videos, in the form of a collection of images or cartoons, with a duration of 4 minutes and 36 seconds, are given once and include a selection of healthy snacks at <https://drive.google.com/file/d/1vmNNDgdu7cImSvG232XiwqA154s3vNdG/view?usp=drivesd>. Knowledge was measured before and after the intervention. Univariate data analysis using frequency and bivariate distributions with the Wilcoxon test at error rates (α 5%) (Imas & Nauri, 2018).

RESULTS

The results of the study were obtained from the respondents' characteristics, including age and gender, and from students' knowledge before and after the Edutainment method on selecting healthy snacks. Most respondents experienced a change in knowledge scores for the better, indicating that a fun and interactive learning approach can help children understand nutrition materials more effectively. These findings support the use of entertainment-based educational media as a health promotion strategy that is relevant and in accordance with the characteristics of elementary school-age children. The results showed that edutainment interventions significantly increased children's knowledge about healthy snacks. This shows that practically, the approach is feasible to be applied as an educational method in the elementary school environment because it provides relevant and beneficial changes for student behavior.

Characteristics of respondents based on age and gender at SD Muhammadiyah 1 Palu in 2024

Table 1. Characteristics of Respondents

Respondent Characteristics	n	%
Age		
8 th	5	25
9 th	15	75
Sex		
Boys	9	45
Girls	11	55

The majority of respondents were 9 years old at 75.0%, and the majority of respondents were girls at 55.0%.

Table 2. Frequency of student knowledge before and after the Edutainment method

Knowledge	Pre Test		Post Test	
	N (20)	%	N (20)	%
Both	1	5.0	12	60.0
Enough	3	15.0	8	40.0
Less	16	80.0	0	0.0

Table 2 shows that the knowledge of respondents before the intervention was good, amounting to 1 child, 5.0%, and 3 children, 15.0%, and less, 16 children 80.0% after the edutainment method, the knowledge of respondents increased to good, 12 children 60.0% and enough, 8 children, 40.0%.

Table 3. Knowledge of healthy snack selection

Knowledge	Pre Test		Post Test	
	n	%	n	%
Safe snacks are snacks that do not contain harmful ingredients and are free from germs.	12	60	16	80
Unhealthy foods can cause dizziness and stomach pain.	6	30	14	70
Snacks that are marked on the hands for example lollipop, candy are dangerous snacks	6	30	12	60
Food that has passed its expiration date is not safe to eat	2	10	10	50
Food that is sold and not closed is not safe to eat.	8	40	19	95
Snack food is a source of nutrition that can meet nutritional needs	16	80	17	85
Chewy snacks such as cimol, siomay, and instant noodles are not good for health	6	30	13	65
Washing your hands before eating is one way to maintain personal hygiene.	17	85	19	95
Bringing food from home is better than snacks at school	12	60	18	90
Food that contains foreign objects (hair, sand, or other dirt) is unhygienic snacks	7	35	15	75

Table 3 shows the results of measuring students' knowledge of selecting healthy snacks before (pre-test) and after (post-test) the education provided at SD Muhammadiyah 1 Palu in 2024. In general, knowledge of all indicators increased after the intervention. The most notable improvement was seen in understanding food hygiene (uncovered food increased to 95%), clean living behaviors such as handwashing (reached 95%), and the habit of bringing provisions from home (increased to 90%). In addition, understanding the dangers of unhealthy food, expired food, and unhygienic snacks has increased significantly.

Table 4. Wilcoxon Test

Knowledge	Rank	n	Mean Rank	P Value
Pretest-Post Test	Negative Ranks	0 ^a	0.00	0.001
	Positive Ranks	20 ^b	10.50	
	Ties	0 ^c		

Table 3 shows that the Wilcoxon test results indicate 0 negative ranks (n), indicating that no respondents experienced a decrease in knowledge. Positive rank data: 20 respondents show an increase in knowledge. Data ties or similarity of values on pretest and posttest are 0 data, or there are no respondents who experience the same pretest and posttest data, so that the p-value can be obtained is 0.001 so that H_0 is accepted, which means that there is an effect of edutainment on elementary school children's knowledge about healthy snack selection at SD Muhammadiyah 1 Palu.

DISCUSSION

In this study, students' knowledge levels were analyzed before and after the implementation of an edutainment method combining animated videos and interactive games. The results showed a significant improvement in knowledge levels after the intervention. Audio-visual edutainment media has been proven to attract children's attention and make it easier for them to understand the material, as it combines visual elements (moving images) and audio (sound) that are easier for children to digest. Animated videos also present examples of behavior that can be imitated directly, given that school-age children tend to imitate what they see.

Comparison of previous research results. The results of the study Yuliati et al., (2019) state that the average knowledge of students before being given learning with *edutainment* methods realized in the form of video media with comic media shows results that illustrate the effectiveness of video media, which is higher or better than comic media, which is indicated by the N-Gain video of 0.472 with a moderate category, while the N-Gain of comics is very small, which is only 0.06 with a low category. The effectiveness of health promotion through audiovisuals, such as videos, is greater and more engaging because they offer elements of being seen and heard. Audiovisual media can increase a person's understanding, making it is effective in increasing knowledge (Indrajit & Whyuddin, 2021). Results (Mumba et al., 2021) stated that the knowledge of students before being given *edutainment-based* nutrition education about vegetable and fruit consumption, with the number of respondents of 32 students, was a well-informed student, which was 31.2% and less than 9.4%. Meanwhile, among well-educated students, the knowledge of students after receiving edutainment-based nutrition education on the consumption of vegetables and fruits is 50%, and among less educated students, it is 3.1%. After conducting a statistical analysis of the difference in student knowledge before and after edutainment-based nutrition education using the Wilcoxon signed-rank test, the p-value (0.001) was $< \alpha$ (0.05), indicating a significant difference in student knowledge before and after education.

The results of this study are in line with Sandrina & Agustina, (2024) which analyzed and identified the relationship between *peer group support* and the behavior of choosing healthy snacks in school-age children (grade VI) at SDN Jatikramat VI Bekasi City. The researcher used a cross-sectional analytical survey method. The total population of 44 with 40 respondents, obtained the results of the Chi-Square test, which showed that there was a relationship between peer group support and snack choice behavior in grade VI school children at SDN Jatikramat VI, Bekasi City in 2023, with a P value of 0.06 ($p < 0.05$). The results of this study are strengthened by (Intan Nurhayati, Esti Widiastih, Yanuarita Tursinawati, 2025) which shows that knowledge, attitudes and practices have improved after being given edutainment-based nutrition education with audio visuals on changes in the selection of snack foods for school children (PJAS).

Implications for Public Health

These findings have important implications for health promotion efforts at the elementary school level. Health education through the edutainment method can be an effective strategy for conveying nutrition messages in a fun, easily accepted way for children. This approach has the potential to be widely applied in the UKS (School Health Business) program to encourage healthy eating habits and prevent nutritional problems from an early age. If applied consistently, this method can support improvements in children's healthy behaviors that have a long-term impact on public health. It is expected that each homeroom teacher can motivate students to further improve healthy snack selection habits with more interesting learning methods, such as *Edutainment*, which is learning that is inserted with games to make the learning process more enjoyable (Wulandari et al., 2021).

Limitations and Cautions

However, this research also has some limitations. One is that some students are not fluent readers, so they need assistance when filling out questionnaires. In addition, using questionnaires as the sole measurement instrument raises the possibility that some respondents did not read or understand the questions. This can affect the accuracy of the data obtained. Therefore, further

research is recommended using larger samples and more varied data collection methods, such as observation or direct interviews, to obtain more in-depth and valid results.

Recommendations for Future Research

For further research, it is recommended that the implementation of filling out questionnaires be carried out with more intensive assistance, especially for respondents who still have difficulty in reading and so that the understanding of the content of the statement can be maximized. In addition, using more diverse data collection instruments, such as direct interviews or observations, can complement the collection of more accurate data and better describe actual conditions. Researchers may also consider testing a broader range of instruments to ensure that the entire item is easily understood by respondents according to their age and ability level and add attitude variables and comparison groups.

CONCLUSION

Based on the results of the research and discussion on the Influence of Edutainment on Elementary School Children's Knowledge of Healthy Snacks at SD Muhammadiyah 1 Palu, it can be concluded that the Edutainment method influences students' knowledge of selecting healthy snacks at SD Muhammadiyah 1 Palu. Schools are advised to regularly provide education on healthy snacks using edutainment methods that are engaging and easy for children to understand. Teacher assistance is very important, especially for students who are not fluent readers. Collaboration with health workers can also strengthen nutrition promotion efforts from an early age. Further research is suggested, involving a larger, more diverse sample to improve representativeness and strengthen the generalizability of the results.

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