The Impact of Nutrition Education on Knowledge and Nutrition Label Comprehension in Adolescents

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Abstract

Introduction: Adolescence is a critical period of growth and development in which nutritional status and health behaviors play an important role in determining future health outcomes. Rapid lifestyle changes and increased consumption of packaged foods have contributed to rising nutritional problems among adolescents, including obesity and other non-communicable diseases. Understanding nutrition information on food labels is therefore essential to support healthy food choices and improve adolescents' nutritional knowledge.

Objective: Adolescents tend to consume packaged foods high in salt, sugar, and fat. One of the contributing factor is their low comprehension of the display of nutrition facts on the packaging and the habit of not reading them. Data from the Lampung Health Office show that the prevalence of obesity among school-aged children increased from 27% to 37% in 2021 and 2023. Reading nutrition facts is part of the Balanced Nutrition Guidelines. This study aims to analyze the effect of nutrition education using animated video media on knowledge and reading comprehension of nutrition facts on packaged foods among eight-grade adolescents at SMPN 2 Bukit Kemuning, Lampung Utara.

Method: The study used a quantitative pre-experimental with a one-group pretest- posttest design. Nutrition education was delivered through animated video media, followed by measurement of knowledge and comprehension with a 14-days interval between the pretest and posttest. The study population consisted of 104 eight-grade students. Using a simple random sampling method, 84 samples were selected. However,the intervention was given to entire population to avoid sample loss, resulting in 85 samples collected. Data were analyzed using the Paired Sample T- Test.

Result: The results showed a significant increase in the average score knowledge score from 64.05 to 89.07. And in reading comprehension from 59.34 to 85.53. Statitical tests showed a p-value <0.05 for both variables, indicating that nutrition education using animated video media had significant effect on improving adolescents knowledge and comprehension of reading nutrition facts.

Keywords: animated video, comprehension, knowledge, nutrition

Introduction

Recommendations for Habitual Health Adolescence is a transitional period from childhood to adulthood, during which individuals experience growth and development to achieve mental, emotional, social, and physical maturity. A person's condition in adulthood is determined by their nutritional and health status. Adolescence, between the ages of 13 and 18, experiences rapid growth, leading to increased nutritional needs. Adolescents with a balanced nutritional intake have the potential to achieve optimal development. Nutritional problems in adolescents can impact performance and productivity. The emergence of nutritional problems in adolescents can increase the risk of various non-communicable diseases, such as obesity and diabetes (Charina et al., 2022).

Based on the results of the 2023 Indonesian Health Survey, the prevalence of non-communicable diseases (NCDs) is highest among the productive age group (Dwijayanti & Juliani, 2024). Data on the incidence of obesity among schoolchildren in Lampung Province shows that in 2021, the obesity rate among schoolchildren reached 27%, in 2022 it reached 33%, and in 2023 it reached 37% (Lampung Provincial Health Office Profile, 2023). This is due to unhealthy lifestyle changes driven by the rapid advancement of information technology. This has resulted in shifts in food consumption patterns, with a greater prevalence of packaged foods, fast food, and foods with food additives. This statement is supported by research on the prevalence of risky foods in people over 10 years of age, who tend to choose foods containing flavorings (77.8%), salty foods (24.5%), sweeteners (68.1%), and caffeine (36.5%) (N. Fitri & Yuliati, 2020).

Adolescents are beginning to make their own decisions about the food they consume, so it is crucial to provide them with sufficient knowledge to make wise and safe food choices. Therefore, it is crucial for adolescents to understand recommendations to limit their sugar, salt, and fat consumption by carefully examining the nutritional information on packaged food and beverage products (Illavina & Kusumaningati, 2022). This is stated in one of the ten messages of the balanced nutrition guidelines, namely, "Get used to reading food labels on packaging" (Balanced Nutrition Guidelines, 2014). The primary purpose of nutrition labeling is to help consumers identify nutrient deficiencies or excesses that can lead to nutritional problems and to help them choose foods that are safe for their health.

Reading nutritional information on packaged foods is one way to implement a healthy diet. However, knowledge regarding nutritional information in Indonesia remains low. This is indicated by research on nutritional information knowledge levels among productive-age respondents, where 54.7% fell into the category of "poor knowledge," 32.8% had "fair knowledge," and only 12.5% had "good knowledge" (Maemunah & Sjaaf, 2020). Another study found that while most adolescents understand nutritional information, only 18.2% of them frequently read it. The reasons they read nutritional information were primarily price and taste (51%), followed by detailed information related to energy intake control, beauty and health reasons, and allergies (49.5%). Most adolescents cited limited time for reading as a reason for not considering the use of nutritional information. Furthermore, confusing information displays, the lack of nutritional information on some packaged foods, a focus not on health, and a lack of knowledge about how to use nutritional information are some of the reasons for their attitudes regarding their use (Md Nor et al., 2023).

Low nutritional knowledge is a risk factor for nutritional problems and changes in eating habits in adolescence. Nutritional knowledge includes knowledge about food and nutrients, sources of nutrients in food, safe food consumption to prevent disease, proper food preparation to prevent nutrient loss, and how to live a healthy life. Nutritional knowledge will

influence food intake because it provides information related to nutrition, food, and its relationship to health (Aulia, 2021). An adolescent's level of nutritional knowledge will influence their attitudes and behaviors in food choices, which determines whether or not someone understands the benefits of the nutritional content and the food they consume.

The rationale for this study was to examine the knowledge and understanding of nutritional information on packaged foods among eighth-grade adolescents at SMPN 2 Bukit Kemuning, North Lampung. VIII-grade students are middle-aged and, cognitively, have reached the formal operational stage, where individuals begin to think abstractly and logically. At this stage, they are able to understand health concepts, particularly nutrition, in a more complex way than seventh-grade students, but are not yet burdened by academic pressures and national exam preparation like ninth-grade students, which can disrupt their focus on educational interventions. Furthermore, this school is located in a rural area in North Lampung Regency that has not yet received much formal nutrition education intervention.

This school has a sufficient student population for the study, including the support of the principal and the students' socioeconomic backgrounds. Based on observations, this location is also strategic for the study because adolescents have easy access to packaged foods due to the numerous shops selling them near the school, and 27 students (26%) in eighth-grade are overweight. By selecting SMPN 2 Bukit Kemuning and its eighth-grade students, this study is not only scientifically relevant but also contextually relevant to local needs and challenges.

Objective

This study aims to analyze the effect of nutrition education using animated video media on knowledge and reading comprehension of nutrition facts on packaged foods among eight-grade adolescents at SMPN 2 Bukit Kemuning, North Lampung.

Method

This study employed a quantitative research approach using a pre-experimental design with a one-group pretest–posttest model. The study was conducted at SMPN 2 Bukit Kemuning, North Lampung. The intervention consisted of nutrition education delivered through animated video media aimed at improving students' knowledge and reading comprehension of nutrition facts on packaged foods.

The study population included all eighth-grade students at SMPN 2 Bukit Kemuning, totaling 104 students. Sample selection was carried out using a simple random sampling technique, resulting in 84 selected respondents. However, to minimize sample loss and ensure equal exposure to the intervention, nutrition education was provided to the entire population. A total of 85 students completed both the pretest and posttest and were included in the final analysis.

Data collection was conducted in three stages. First, a pretest was administered to measure students' baseline knowledge and reading comprehension of nutrition facts. Second, nutrition education was delivered using animated video media in a structured educational session. Third, a posttest was administered 14 days after the intervention to evaluate changes in knowledge and comprehension. The interval was intended to assess short-term retention of information following the educational intervention.

The research instruments consisted of structured questionnaires designed to measure knowledge and reading comprehension of nutrition facts on packaged foods. The questionnaires were administered in a supervised classroom setting to ensure consistency

and accuracy of responses. Data were analyzed using statistical software. Descriptive analysis was performed to summarize respondent characteristics, while inferential analysis was conducted using the Paired Sample t-test to determine differences in mean scores before and after the intervention. Statistical significance was set at a p-value of less than 0.05.

All research procedures were conducted in accordance with ethical principles, including voluntary participation, informed consent, confidentiality, and anonymity of respondents.

Result

Table 1. The Effect of Nutrition Education Using Animated Videos on Knowledge of Nutritional Information

Knowledge	n	Min	Max	Mean	Sig (two- tailed)
Pretest	85	50	100	64.05	0.000
Posttest	85	67	100	89.07	

Based on data analysis using the Paired Sample T-Test, Table above shows that before and after nutrition education using animated videos, there was a significant difference in knowledge of nutritional information among eighth-grade adolescents, with a p-value <0.05. This means that Ho is rejected, and it can be concluded that nutrition education using animated videos has an effect on the knowledge of nutritional information among eighth-grade adolescents at SMPN 2 Bukit Kemuning.

Table 2. The Effect of Nutrition Education Using Animated Videos on Reading Comprehension of Nutritional Information

Understanding	n	Min	Max	Mean	Sig (two-tailed)
Pretest	85	38	88	59.34	0.000
Posttest	85	75	100	85.34	

Based on data analysis using the Paired Sample T-Test, Table 4.8 shows that before and after nutrition education, there was a significant difference in eighth-grade adolescents' understanding of reading nutritional information, with a p-value <0.05. This means that Ho is rejected, and it can be concluded that nutrition education has an effect on eighth-grade adolescents' understanding of nutritional information at SMPN 2 Bukit Kemuning.

Discussion

Nutrition education is a strategic intervention that can be implemented to increase knowledge among adolescents. This is supported by Lawrence Green's (1980) theory, which states that a person's health is influenced by three factors: predisposing factors, enabling factors, and reinforcing factors. Each of these factors plays a role in shaping knowledge and understanding of an individual's health condition. Knowledge, as one element influencing predisposition, serves as an initial perspective on the concept of health and illness. Nutrition education is one way to build knowledge that ultimately influences an individual's perceptions, attitudes, and behavior.

The increase in knowledge after education demonstrates the validity of Lawrence Green's (1980) theory on predisposing factors in the context of adolescent nutrition

education. In this study, the knowledge pretest and posttest were administered on different days: the pretest on the first day, while the knowledge posttest was administered 14 days after the education and pretest. The results of the Paired Sample T-Test for the pretest and posttest yielded a p-value of 0.000 ($p<0.05$), thus accepting Ha, indicating that nutrition education using animated video media has an effect on knowledge of nutritional information. This is in line with the results of previous research on health knowledge using a pretest-posttest method with a 14-day interval, which indicated an increase in knowledge among respondents (Sari & Lanaya, 2025). This study aligns with research conducted by Nurfitriani & Kurniasari (2023) on nutrition education using animated videos for adolescents, as evidenced by the p-value (0.000) obtained for students' knowledge levels.

This is because the use of animated videos as educational media can improve educational outcomes by engaging students' imagination and motivation. Their use in education is highly recommended to ensure high-quality education. The educational material designed in these animated videos is made as engaging as possible, using words that are easy for students to understand.

Animated videos encourage a desire to learn more. The advantages of animated videos as a medium for delivering health education include their ability to capture attention, are considered more enjoyable, and prevent adolescents from feeling bored during the educational process, thus increasing their enthusiasm for the material. Animated videos have the ability to explain complex topics that are difficult to explain with just words or

images. Furthermore, their presentation is controllable and repeatable, and their reach is broader. Animated videos are also interactive media that can overcome the constraints of space and time (Riska Rahmayanti & Magdalena, 2024). The effectiveness of this media is determined by the stimulation of the five senses. One indicator of the success of an educational medium is an increase in knowledge before and after the information is provided (Azhari & Fayasari, 2020).

Although research results show a significant increase in students' knowledge of nutritional information after nutrition education, implementing this knowledge in their daily lives still faces challenges. One identified obstacle is the lack of a healthy canteen at SMPN 2 Bukit Kemuning. The school canteen, which should provide nutritious food and a means of implementing nutritional knowledge, is not yet optimally available. For this knowledge to influence behavioral change, support from the school environment is essential, one of which is through the provision of a healthy canteen. The lack of direct access to healthy food and nutritional information can result in students' knowledge being theoretical and not developing into healthy consumption habits. For the knowledge gained through education to truly impact behavioral change, support from the school environment is crucial, one example being the provision of a healthy canteen that sells labeled foods, low in sugar, salt, and fat, and in accordance with the principles of balanced nutrition. With a healthy canteen, students can hone their food selection skills directly based on nutritional information, so that their knowledge can be transformed into healthier behaviors and independent consumption decision-making.

Conclusion

The results of the paired sample t-test for the knowledge variable showed a $P < 0.05$, indicating that nutrition education had an effect on respondents' knowledge before and after the intervention. The results of the paired sample t-test for the reading comprehension

variable showed a P < 0.05, indicating that nutrition education had an effect on respondents' reading comprehension of nutritional information before and after the intervention.

Conflict of Interest

No declare.

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