

Research Article

Effect of nutrition education on adolescent eating behavior in the prevention of obesity

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<https://doi.org/xxxxx>**Abstract**

Obesity is one of the nutritional problems among adolescents that has become a global issue, particularly in developing countries such as Indonesia. Various factors can contribute to obesity in adolescents, one of which is poor eating behavior. Nutrition education using media is considered effective in increasing knowledge, thereby influencing eating behavior to become healthier. Motion graphics videos were visually and audibly engaging, while leaflets were appealing in terms of text and images. This study aims to analyze The Effect of Nutrition Education on Adolescent Eating Behavior in the Prevention of Obesity. This study used Quasy Experimental Design with Pre-Post test Control Group Design. The sampling technique used was stratified random sampling, involving 47 respondents from grades 10 and 11 at SMA Intensif Taruna Pembangunan Surabaya. Data on eating behavior were collected using the Dutch Eating Behavior Questionnaire (DEBQ). Data analysis was conducted using Mann-Whitney statistical tests. The results of the statistical test show that there is an effect of nutrition education on adolescent eating behavior, which is evidenced by a p-value < 0.05 ($p = 0.028$). This research proves that nutrition education through leaflets and motion graphic videos is effective on adolescent eating behavior. The results of this study contribute to innovations in audiovisual-based nutrition education.

1. INTRODUCTION

Data from the World Health Organization (WHO) shows that more than 390 million children and adolescents aged 5 to 19 are overweight. The prevalence of overweight (overweight & obesity) has increased significantly from only 8% to 20% (Unicef, 2019). In Indonesia, according to data from the Indonesian Health Survey (SKI) between 2021 and 2023, the prevalence of overweight increased from 21.8% to 23.4% (Kementerian Kesehatan RI, 2023). The prevalence of adolescent obesity in East Java ranks sixth highest in Indonesia at 22.37% (East Java Health Department, 2022). There are many causal factors that can influence the occurrence of obesity in adolescents, one of which is improper eating behavior such as consuming foods high in energy, protein, fat, and carbohydrates. Research conducted at SMPN 12 Bogor by Pratiwi et al. (2022) shows that as many as 69.7% of respondents have poor eating habits and experience obesity (Pratiwi et al., 2022). Research by Fadhillah et al. (2018) on adolescents at Junior High Schools in the Poncol area of Semarang City showed that 72.8% of respondents had poor eating behavior, due to respondents consuming food excessively and having a lack of water intake (Fadhillah et al., 2018). The results of several studies indicate that there are changes in adolescents' eating behaviors that are not good, which will have long-term impacts on adolescents' nutritional status, both undernutrition and overnutrition (Lathifa & Mahmudiono, 2020).

Changes in eating behavior have the potential to cause overweight or obesity in individuals. A person's emotional condition can result in changes in eating behavior becoming unhealthy, causing a person to lose weight due to a decrease in appetite or, conversely, experience weight gain caused by increased appetite, leading to obesity (Rahim & Prasetya, 2022). This eating behavior affects

teenagers' responses to procedures and habits, frequency, food preferences, and eating patterns. Previous research modifying nutrition education for adolescents, it is hoped that it can increase nutrition knowledge, which affects behavior in choosing and consuming foods that meet individual nutrient requirements (Lutfiyati & Qorri A'ina, 2025). Nutrition education is an educational approach to increase knowledge and can also equip the younger generation with skills, one of which is choosing healthy food, a skill in adolescents to help the behavior change process so that it can affect their quality of life. The better a person's nutritional knowledge, the more it will affect their attitudes and eating behavior (Habibie et al., 2022). Nutrition education can be carried out using engaging media such as videos and motion graphics, with the aim of increasing adolescents interest so that the material delivered can be well received. This study aims to analyze the effect of nutrition education through motion graphic video media and leaflet media on eating behavior in the prevention of obesity in adolescents.

2. MATERIALS AND METHODS

2.1 Participants

This study involved 47 tenth and eleventh grade students of SMA Intensif Taruna Pembangunan Surabaya which is divided into 2 groups. Samples were obtained using the stratified random sampling method. Inclusion criteria include: students who are able to communicate well, and are in good health. While exclusion criteria include: students who are currently on a diet.

2.2 Design Study

This study used Quasy Experimental Design with Pre-Post test Control Group Design. The intervention group received education through motion graphics videos. while the control group received education through leaflets. The intervention was carried out 4 times in one month. Eating behavior was studied using the DEBQ (Dutch Eating Behavior Questionnaire) which are categorized into 4 categories, namely very good with a score >112.0, good with a score of 84.0-111.0, not good with a score of 56.0-83.0, and very bad with a score <55% which was conducted before and after the intervention (Khusna, 2023). The independent variable was education with motion graphic videos and leaflets, while the dependent variable were adolescent eating behavior.

2.3 Data Analysis

The data analysis was conducted using SPSS version 26. Respondent characteristics were described through univariate analysis. Before inferential testing, the normality of the data was assessed. Since the data were found to be non-normally distributed, the Mann Whitney was applied to examine differences between 2 groups. A p-value of less than 0.05 was considered statistically significant. Ethical approval for this study was obtained from the Health Research Ethics Committee of Universitas Nahdlatul Ulama Surabaya (No. 0038/EC/KEPK/UNUSA/2025). Informed consent was obtained from all participants, and confidentiality as well as anonymity were maintained throughout the study.

3. RESULTS AND DISCUSSION

3.1 Respondent Characteristics

A total of 47 respondents were involved in this study, consisting of 23 dan 24 respondents in each group. Most of the respondents were 17 years old (55,3%) and female (53,2%). All respondents had never received education about nutrition (100%). The respondents' characteristic data is presented in Table 1.

Table 1. Respondent Characteristics (n = 47)

Variable	Frequency (n)	Percentage (%)
Age		
15 (years)	4	8,5
16 (years)	17	36,2
17 (years)	26	55,3
Sex		
Female	25	53,2
Male	22	46,8
History of Nutrition Education		

Ever	0	0
Never	47	100

Continuous exposure to positive health-related information can help develop constructive perspectives and behaviors in daily life, as adolescents are encouraged to seek further beneficial information. Adequate exposure to information may influence an individual's knowledge and attitudes, which in turn can shape their health-related behaviors (Wati et al., 2022)

3.2 The effect of nutrition education on adolescent eating behavior

The results of the statistical test show that there is an effect of nutrition education on adolescent eating behavior, which is evidenced by a p-value < 0.05 ($p = 0.028$). Data is presented in Table 2.

Table 2. Differences in Eating Behaviour 2 groups (n = 47)

Variable	Categories	Groups				p-value
		Control		Experiment		
		n	%	n	%	
Eating Behaviour	Very good	16	66,7	10	43,5	0,028*
	Good	8	33,3	13	56,5	
	Not good	0	0	0	0	
	Total	24	100	23	100	

*Mann Whitney, $p < 0.05$ indicates a significant difference.

This study shows that there are differences in eating behavior between groups that received education through motion graphic videos and leaflets. Eating behavior was measured using an instrument in the form of the Dutch Eating Behavior Questionnaire (DEBQ), which includes 3 aspects of eating behavior, namely emotional eating, restrained eating, and external eating. Educational media such as motion graphic videos and leaflets are considered capable of affecting these three aspects of eating behavior. Eating behavior can also be influenced by several factors such as family, environment, and daily eating patterns. Providing education through media can facilitate respondents' ability to understand and manage the information received. The provision of leaflet media is more effective in improving eating behavior compared to motion graphic video media. The effectiveness of leaflet media shows that printed media is practical and easy to carry anywhere, has a clear appearance with concise content, and can be read repeatedly, compared to motion graphic videos which are digital and present material sequentially, requiring students to follow the flow from beginning to end. This shows that every individual has different methods of understanding and learning in acquiring the information provided, whether through motion graphic video media or leaflet media.

This study in line with the research conducted by Pratiwi et al. (2022), which stated that the provision of printed media in the form of leaflets is effective in increasing knowledge and eating behavior, with the percentage in the good category before receiving nutrition education being 18.0% and increasing to 58.0% after receiving nutrition education through leaflets (Pratiwi et al., 2022). Therefore, it can be concluded that the media used to deliver information can influence the level of understanding, and choosing the appropriate education becomes an important factor in enhancing the effectiveness of nutrition education. This research is also supported by a study conducted by Fadila et al (2022) which stated that before and after receiving nutrition education in the leaflet group and the animated video group, p-value results of <0.05 were obtained, so it can be concluded that nutrition education using leaflet media and animated video media has an effect on improving knowledge in an effort to prevent obesity in adolescents, so that it can influence adolescents' eating behavior to become better (Fadila et al., 2022). Nutrition education has a positive impact on adolescents' perceptions. This increases adolescents' awareness and attitudes regarding nutrition and eating habits (Verma et al., 2026). Unhealthy eating behaviors during late adolescence may persist into adulthood, thereby influencing nutritional status and contributing to a higher prevalence of diseases and health disorders later in life (M. & P., 2025).

4. CONCLUSION

This research proves that nutrition education through leaflets and motion graphic videos is effective on adolescent eating behavior. The results of this study contribute to innovations in audiovisual-based nutrition education.

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