



The Effect of Education with Animated Videos on Knowledge and Attitudes in Preventing Obesity in Adolescents at SMA Negeri 9 Semarang

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Abstract. Obesity is a global nutrition problem that is increasing among adolescents and has the potential to cause obesity in adulthood. One way to improve the knowledge and attitudes of adolescents in preventing obesity is through nutrition education. Nutrition education media in the form of animated videos and power points can improve knowledge and attitudes. The purpose of this study was to determine the difference in the effect of animated video and power point media interventions on adolescents' knowledge and attitudes about obesity. This type of research is Quasi Experimental using Pretest Posttest Design. The research sample amounted to 84 students from each group using simple random sampling technique. Knowledge and attitudes were taken through a questionnaire. Data analysis using Wilcoxon test and Mann-Whitney test. Knowledge attitude score on animated video media increased by 25.3% and power point media by 17.7% with significance ($p=0.000$). The attitude score on animated video media increased by 16.2% and power point media by 6.5% with significance ($p=0.000$). Education using animated video media is proven to increase students' knowledge and attitudes in preventing obesity and is more effective than education using power points.

Keywords: Adolescents, Attitude, Education, Knowledge, Obesity.

1. Introduction

Obesity is a global nutritional problem that is increasing among adolescents and has the potential to cause obesity in adulthood. Obesity in adolescents can be determined using the BMI/U indicator[1]. Obesity in adolescents is characterized by excessive body weight that is inappropriate for their age and height which is caused by excessive food consumption and lack of physical activity such as exercise[2].

The prevalence of obesity and overweight in Central Java based on Body Mass Index/Age (BMI/U) is 14.6% in adolescents aged 13-15 years and 11.6% in adolescents aged 16-18 years. Meanwhile, the prevalence of obesity among teenagers in Semarang City is

11.09%[3]. According to Handayani (2019), data from student screening in Semarang City in 2017 showed that the study cases of obesity in high school/vocational school students were mostly in the Padangsari Community Health Center area at 11.19%. Based on the results of the screening, it was found that 73 out of 326 obese teenagers in SMA Negeri 9 Semarang or 22.39% were obese. This data shows the condition of nutritional problems among teenagers in Indonesia which must be improved[4].

Efforts that can be made to overcome obesity and overweight are through nutritional education. Nutrition education is education that aims to bring about changes in knowledge and attitudes regarding food intake as well as improving dietary patterns and nutritional status. The targets who will receive education through nutrition counseling are teenagers with the aim of increasing knowledge for teenagers[5]. Saputri's research (2017) shows the influence of counseling about balanced nutrition on motivation to prevent obesity[6].

Media is a form of intermediary used by humans to convey or provide ideas, opinions or notions. Audio visual is a technology that combines electronic media in the form of video to produce dynamic and interesting displays. Animated video is a medium that combines audio media and visual media to attract the attention of school age children, can display objects in detail, and can help make difficult lessons easier[7]. Syakir's (2018) research stated that there were changes in knowledge and attitude scores after education was carried out using video media. Therefore, the aim of this research is to determine the differences between interventions using animated video and power point media on teenagers' knowledge and attitudes in preventing obesity[8].

2. Materials And Methods

This research was conducted on June 12 at SMA Negeri 9 Semarang. This research refers to quantitative approach research. The type of research used in this research is Quasi Experimental. The Quasi Experimental design used in this research is the Pretest Posttest Design, where in this design the respondent will be given a pretest before being given treatment, and a posttest after being given treatment. The population in this study was 352 students and then calculated using the Lameshow 1997 formula. There were 2 treatment groups, namely the experimental group using animated video media and the control group using power point media. The research sample was 84 students for each group, taken using simple random sampling techniques. This research has fulfilled the research ethics requirements No. 067/KE/06/2023.

The data collection technique in this research consists of primary data obtained by filling out a knowledge and attitude questionnaire by each student as a respondent, while secondary data is obtained from the school which includes a general description of the

research location, student data, and the number of students. The instruments used in this research consisted of a knowledge and attitude questionnaire form, animated video media, and power point media.

There are 10 knowledge questions that get a score of 1 if the answer is correct and a score of 0 if the answer is wrong. Knowledge regarding snack selection was categorized as poor (<60%), moderate (60 -80%), and good (>80%). For attitude questions, there are 10 questions, using a Likert scale, namely strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS). Attitudes regarding snack selection were categorized as positive attitudes (≥ 70%) and negative attitudes (< 70%).

The analysis used includes univariate and bivariate analysis. Univariate analysis was used to obtain frequency distribution data including gender and age. Bivariate analysis is used to test a design with more than one variable. To determine the difference in students' level of knowledge and attitudes before and after being given animated video or power point media, the data was first tested for normality using Kolmogorov Smirnov. Next, the bivariate analysis uses a non-parametric statistical test, namely the Wilcoxon Signed Rank Test, then to test the difference between two groups using the Mann Whitney test. The test is considered significant if $p < 0.05$.

3. Results and Discussions

3.1 The Effect of Media Intervention on Knowledge

Table 1. Distribution of Students Knowledge Before and After Being Given Education

Knowledge Level	Animated Video Group		Power Point Group					
	Group		Group					
	Pre-test	Post-test	Pre-test	Post-test				
	n	%	n	%	n	%	n	%
Less (<60%)	20	23,8	-	-	25	29,8	3	3,6
Medium (60-80%)	50	59,5	18	21,4	38	45,2	36	42,9
Good (>80%)	14	16,7	66	78,6	21	25	45	53,6
Total	84	100	84	100	84	100	84	100

Based on Table 1. in the pre-test animation video group, the majority of students fell into the moderate knowledge category, namely 50 students (59.5%) with an average score of 66.67. However, after being given education and then carrying out a post-test, the majority of students in the animation video group fell into the good category, namely 66 students (78.6%) with an average score of 89.29. Meanwhile, in the pre-test in the power point group, the majority of students fell into the medium category, namely 38 students (45.2%) with an average score of 66.9. After being given education and then carrying out a post-test, the

majority of students in the power point group fell into the good category, namely 45 students (53.6%) with an average score of 81.31.

Table 2. Differences in Student Knowledge Before and After Intervention

Knowledge Level	Pre-test	Post-test	Δ	p^a
Animated Video	66,67±15,07	89,29±7,07	22,61±11,2	0,000
Power Point	66,9±16,86	81,31±12,68	14,4±10,79	0,000
p^b	0,964	0,000	0,000	

Information :

pa = Wilcoxon test value, pb = Mann Whitney test, p value < 0.05 = significant

Table 2 shows that in the pre-test there was no significant difference between animated video media and power point media. This shows that the knowledge before being given education has the same level of knowledge between animated video media and power point media. After being given education using animated video media and power point media, there was an increase in knowledge scores, namely with a difference of 22.61 ± 11.2 for animated video media and 14.4 ± 10.79 for power point media. Based on the results of statistical tests using the Wilcoxon test, it shows a significant difference between the mean knowledge scores before and after being given education in the animated video media group and the power point media group. When compared between the animated video media group and the power point media group using the Mann Whitney test, there was a significant difference, with the largest increase in knowledge scores in the animated video media group, namely 25.3%.

The results of this research are in line with research conducted by Rahmi (2019) which shows that there are differences in providing education using animated video and power point media, where the animated video group shows better results regarding knowledge[9]. On the knowledge questionnaire, the question most often answered incorrectly by students was question number 4, namely "Because of what can obesity occur?". This is because students do not understand well the causes of obesity.

According to Loho (2021) that the methods and media used can influence the delivery of information, because both can have a significant impact on changes in knowledge[10]. This can be seen from the results of the research analysis above which shows an increase in knowledge before and after being given counseling regarding obesity prevention. Thus it can be concluded that the counseling method is effectively used to increase students' knowledge about obesity.

Meanwhile, according to Hamtiah (2012), the media has a very important role in determining the success of learning. Media created using technology, such as audio-visual

(video) media greatly influences the learning process. Apart from that, the use of animated video media also helps convey messages more clearly. Information conveyed verbally is sometimes difficult to understand, so animated video media can act as a tool in clarifying learning messages[11].

In this research, there is an increase in knowledge between the use of animated video media and power point media. This is because when students are given education using animated video media with an asynchronous method, where students learn independently to understand the material provided during education[12]. Animated video media has image elements and sound elements so that this media can involve the sense of sight and the sense of hearing simultaneously. This media also has an attractive design that contains moving animations and is equipped with material descriptions regarding obesity prevention so that it is easier for students to understand. This media can reduce boredom in learning so that it can increase motivation in learning[13].

When students are given education using power point media using the synchronous method, where there is interaction when providing education[12]. On Power Point media, students receive education with explanations from resource persons regarding the obesity material in Power Point. The use of media using PowerPoint is quite good as an educational medium, but because PPT is in narrative text material, it would be better if this media was collaborated with animated video media so that learning is not monotonous so that students do not easily feel bored[14]. It can be concluded that the media that is better used in providing education is animated video media because this media can increase knowledge even though students learn independently to understand the material about obesity contained in animated videos.

3.2 The Effect of Media Intervention on Attitudes

Table 3. Distribution of Students' Attitudes Before and After Being Given Education

Attitude Level	Animated Video Group				Power Point Group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Negative (<70%)	43	51,2	5	6	50	59,5	7	8,3
Positive (≥70%)	41	48,8	79	94	34	40,5	77	91,7
Total	84	100	84	100	84	100	84	100

Table 3 shows the respondents' attitudes in the pre-test and post-test. In the animated video group, after the pre-test was carried out, the majority of students fell into the negative attitude category, namely 43 students (51.2%) with an average score of 67.67. After being given education, a post-test was carried out, the majority of students fell into the positive attitude category, namely 79 students (94%) with an average score of 80.77. Meanwhile, in

the power point group, after the pre-test was carried out, the majority of students fell into the negative attitude category, namely 50 students (59.5%) with an average score of 70.35. After being given education, a post-test was carried out, the majority of students fell into the positive attitude category, namely 77 students (91.7%) with an average score of 75.26.

Table 4. Differences in Student Attitudes Before and After Intervention

Attitude Level	Pre-test	Post-test	Δ	p^a
Animated Video	67,67 \pm 7,52	80,77 \pm 6,6	13,09 \pm 8,06	0,000
Power Point	70,35 \pm 7,88	75,26 \pm 5,98	4,91 \pm 5,05	0,000
p^b	0,038	0,000	0,000	

Information :

p^a = Wilcoxon test value, p^b = Mann Whitney test, p value < 0.05 = significant

Table 4 shows that in the pre-test there are significant differences between animated video media and power point media. After being given education using animated video media and power point media, there was an increase in attitude scores, namely 13.09 ± 8.06 for animated video media and 4.91 ± 5.05 for power point media. Based on the results of statistical tests using the Wilcoxon test, it shows a significant difference between the mean attitude scores before and after being given education in the animated video media group and the power point media group. When compared between the animated video media group and the power point media group using the Mann Whitney test, there was a significant difference, with the largest increase in attitude scores in the animated video media group, namely 16.2%.

The results of this research are in line with research conducted by Herawati (2022) which shows that there is a difference in mean attitude scores between the video media group and the PPT group[14]. The average attitude score of the video group is superior to that of the PPT group, so it can be concluded that the use of video media has a better effect on changing attitudes compared to PPT media.

Attitude is an individual's feelings (positive and negative) towards an object after evaluating the object. If more objects are assessed, then more attitudes will be formed. Attitudes have several roles, such as adaptation, emotional defense, expression of values, and knowledge[15]. A person will act and behave according to the knowledge they have. More information can influence or increase a person's knowledge which will influence attitudes and behavior[9].

Agustini (2010) suggests that attitude involves some knowledge about something. From this definition, attitude involves knowledge about something, including the situation. The

situation here can be described as an object that will ultimately influence feelings or emotions and then allow reactions or responses to take action[16].

Every person has a different attitude towards an object. This is caused by factors that exist in each individual, such as differences in talents, interests, experience, knowledge, intensity of feelings and also environmental situations. Not all information can influence attitudes. Information that influences attitudes is very dependent on the content, source and media of the information in question. According to psychology, a positive attitude will be formed if the stimuli that come to someone provide a pleasant or interesting experience[17].

Audio visual media is very influential in changing people's behavior patterns, especially in terms of information and persuasion. Audio visual media has image elements and sound elements so that this media can involve the sense of sight and the sense of hearing simultaneously. This media can increase students' learning motivation because they can listen, listen and see pictures[14]. Power Point is a piece of software specifically designed to be able to display multimedia programs attractively, easy to create, easy to use and relatively cheap[18].

In this research, there was an increase in attitudes between the use of animated video media and power point media. When given education using animated video media, students receive education without any explanation from the resource person. Meanwhile, in Power Point media, students receive education with the resource person's explanation regarding the script material in Power Point. It can be concluded that the media that is better used in providing education is animated video media because this media can improve students' attitudes without any explanation from the resource person.

4. Conclusions

In preventing obesity, the use of animated video media has been proven to improve students' knowledge and attitudes and is more effective than using power points.

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