



The Effect Of Health Promotion Interventions Through Comic-Based Photonovella Media In Increasing Knowledge And Attitudes About The Dangers Of Smoking Among Middle School Students In Jambi City

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Abstract. Smoking has very negative health consequences. The dangers of smoking must be recognized from school age. The snakes and ladders game is an interesting type of educational media that can be used to increase students' knowledge about the dangers of smoking. The aim of this research is to find out how the use of the snakes and ladders game impacts junior high school students' knowledge about the dangers of smoking. This research is considered quasi-experimental with a non-randomized control group pretest and posttest approach. The number of respondents in this study was 90 students, where respondents were divided into 2 groups, namely the treatment group who were given health education using comic-based Photonovella media and the comparison group using conventional methods (posters). Data were collected using a questionnaire and analyzed using the Wilcoxon Test and Mann Whitney U Test. The results of the Wilcoxon test showed a significant increase in the post test scores for the knowledge and behavior variables in both the treatment and comparison groups, but there was no significant increase in the post test scores for the attitude variables. Then the results of the Mann Whitney U Test (sig.2-tailed) on knowledge ($0.007 < 0.05$), attitudes ($0.217 > 0.05$), and behavior ($0.024 < 0.05$). This indicates that there is a significant difference between the scores of the treatment group and the comparison group on the knowledge and behavior variables, but there is no significant difference on the attitude variable. Comic-based photonovella can be used in the learning process because they are very effective in increasing children's knowledge, attitudes and behavior about the dangers of smoking. Therefore, this can be used as an alternative learning media to increase students' knowledge of health by increasing their knowledge about health.

Keywords: Comic based photonovella, Knowledge, Attitude, Behavior

1. INTRODUCTION

The large population and high prevalence of smoking are still a national health problem. Indonesia is the third country with the highest number of smokers in the world, only above India and China. According to 2010 Riskesdas data, of the 237.56 million Indonesian population, around 82 million actively smoke. (Vinet & Zhedanov, 2011). The 25 to 64 year old age group smokes the most, with the majority having low education. In 2013, 33.4% of adults aged 30 to 34 were active daily smokers, with men outnumbering women (47, 5% versus 1.1%). (Research et al., 2013)

Smoking has very negative health consequences. Smoking can cause several types of cancer. The Department of Health and Human Services states that "smoking can cause cancer in almost all of your body." Cancer of the mouth, nose and throat, cancer of the larynx (vocal cords), cancer of the trachea (windpipe), esophagus cancer, lung cancer, stomach cancer, pancreatic

cancer, kidney and urinary tract cancer, bladder cancer, cervical cancer, and Bone marrow and blood cancer are the cancers they refer to.(General, nd)

According to New South Wales Health, smoking is a major risk factor for cardiovascular disease. Those who smoke have a 2-3 times higher risk compared to people who do not smoke. Heavy smokers have a 2-4 times greater risk than non-smokers of stroke, heart disease or cardiovascular disease, accounting for 40% of smoker deaths.(Sheet, n.d.)

Even in countries with extensive anti-smoking campaigns, awareness of the negative effects of smoking is generally low. Most smokers are unaware of the connection between smoking and its effects on their health. One reason is the time it takes, approximately twenty to twenty-five years, from when a person starts smoking until the appearance of various diseases caused by smoking. Smokers are motivated to quit smoking because they understand the dangers of smoking.(Gyts et al., 2019)

Smoking is a learned habit. Learning starts when you are a child, while becoming a smoker starts when you are a teenager. Learning or socialization seems to occur through vertical transmission from previous generations. This includes socialization through the family environment, especially the permissive attitude of parents towards adolescent smoking behavior. Horizontal transmission can also occur through the peer environment. However, the most significant contribution is the satisfaction obtained after smoking or cigarettes, which makes a significant contribution.(Komasari & Mada, 2000)

Several factors, such as knowledge, attitudes, friendships, and easy access to smoking behavior, influence children's smoking behavior problems. This is in line with research findings by Firdaus (2014), which shows that children's smoking behavior is influenced by peer relationships, the availability of cigarettes, poor knowledge and attitudes, so that many elementary school students smoke. (Firdaus, nd)

According to 2013 Basic Health Research (Riskesdas) data, the smoking behavior of people aged 15 years and over increased from 34.2% in 2007 to 36.3% in 2013(Research et al., 2013). In 2013, 64.9% of men and 2.1% of women continued to smoke cigarettes. According to Smet in Nasution, the average age for first smoking was between 11-13 years.(Bina & Malang, nd). According to Kumboyono's research, most respondents smoked for the first time when they were in junior high school. This is because teenagers at their growing stage tend to be interested in new things, including cigarettes.

According to the data, Jambi province ranks 16th in terms of the proportion of people aged over 10 years who smoke, and the province ranks 16th in terms of the number of people who smoke every day at 21.2%.(Cigarette., 2017). According to Jambi City Regional

Regulation No.3 of 2017 concerning Non-Smoking Areas Article 7, which stipulates that smoking is prohibited in educational environments, the number of people who smoke actively in Jambi City is quite high. This research will determine how effective the game of snakes and ladders is in increasing knowledge students of SMPN 17 Class VII and VIII in Jambi City about the dangers of smoking. The aim of this research is to find out how effective the use of the snakes and ladders game media is in increasing students' knowledge about the dangers of smoking.

Promoting health in schools should use an approach that is appropriate to the world of school children. One of the outreach media that can be used for elementary and middle school children is using Photonovela, which is a media that can visualize graphic images and can show public concern or awareness. Photonovela is also often used with the term comic. Comics are a visual communication medium that has the power to provide information and stimulate the imagination so that they are easy to understand and understand because comics combine images and writing arranged in one storyline.(Suparman et al., 2020)The advantage of comics themselves is that they can explain the content of the material in the form of stories accompanied by picture illustrations, comic media consists of many colors so that they attract enthusiasm for learning and make it easier for us to translate stories into pictures. When we are confronted with the context of facts, there is an effect that makes an impression on us to remember something for longer(Waluyanto et al., nd)

2. LITERATURE REVIEW

2.1 Cigarette

Cigarettes are processed tobacco that is rolled or rolled or wrapped in materials such as paper, corn husks, or leaves that are about 8-10 cm long. The cigarette is burned at the front end and left until the embers burn, burning the paper and tobacco at the front end. cigarette. The use of cigarettes by burning the front end of the cigarette and then the cigarette emits smoke which is inhaled through the mouth through the back of the cigarette, then the smoke is expelled through the mouth or nose.(Scientific & Health, 2017). Around 4000 components released by cigarette smoke, some of which contain toxins and can change the nature of the cells in the human body to become malignant, because there are around 43 tobacco substances that are known to cause cancer and the 3 most commonly known substances are nicotine, tar. and carbon monoxide.

2.2 Health Education Media

Tools used by educators in delivering educational or teaching materials. Health education media is also called a teaching aid because it functions to help and demonstrate something in the education or teaching process. The principle of making teaching aids or media is that the knowledge that each person has is received or captured through the five senses ((Gejir IN, A., 2017)

The more five senses are used, the more and clearer the understanding or knowledge obtained. This shows that the existence of visual aids is intended to move the senses as much as possible to an object so as to facilitate understanding. According to research by experts, the five senses that transmit the most knowledge to the brain are the eyes (approximately 75% to 87%), while 13% to 25% of human knowledge is obtained or transmitted through other senses (12). One of the images most often used as a theoretical basis for the use of media in the learning process is Edgar Dale's "Dale's Cone of Experience".(Gumelar, nd)



Edgar Dale's Cone of Experience Drawing

Other sources state that the effectiveness of the media on target understanding, namely(Gejir IN, A., 2017):

Verbal : 1 ×

Visual : 3.5×

Verbal and Visual : 6×

There are differences in a person's memory abilities

	After 3 Hours	After 3 Days
Verbal	70%	10%
Visual	72%	20%
Verbal and Visual	85%	65%

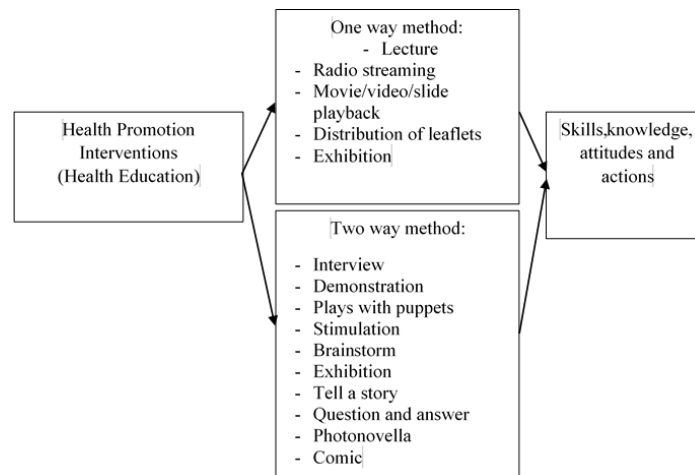
In conveying information using media, there is a planning model for selecting effective media, this model is known as "ASSURE" (Analyze learner characteristics, State objective, Select or modify, Utilize, Request learner response, and Evaluate). This model introduces six main activities in selecting media in learning, namely(Gejir IN, A., 2017)

2.3 Comic

Comics are a form of cartoon images that convey characters and act out a story in a sequence that is closely linked to the images and is designed to provide entertainment to readers. Novels are simple in their presentation and have story elements that contain a big message but are presented concisely and are easy to digest. Along with technological developments that continue to become sophisticated, novels are progressing relatively quickly. According to the media for presenting comics to the public, comics can be divided into 2 types, namely paper-based comics. The medium that has long been used is paper. Examples include comic books, comic strips, comic cartoons and promotional comics. 2) Zaman's digital-based comic. With the development of the times, new comics have been created in digital format. Digital comics are not limited in size, format and durability for storage. Easily accessible digital comics make it easier for readers to read the contents of the comics. The costs of making digital comics are cheaper than paper media. Digital comics are divided into three, namely: Online comics, Mobile comics, and New media.(Health Promotion And Behavioral Science, n.d.)

2.4 Theoretical framework

The theoretical framework for measuring behavioral outcomes of health education according to Herijulianti (2009) can be seen in the following chart: (Herijulianti, 2009)



3. RESEARCH METHOD

This type of research is experimental, namely *quasi experimental* with a non-randomized control group pretest and posttest approach. The number of respondents in this study was 90 students, where respondents were divided into 2 groups, namely the treatment group who were given health education using comic-based Photonovella media and the comparison group using conventional methods (posters). Data were collected using a questionnaire and analyzed using the Wilcoxon Test and Mann Whitney U Test

In the intervention group, education was given about the dangers of smoking and use Comic-based Photonovella media as a communication tool. Students receive a pre-test in

the form of a questionnaire with the aim of measuring students' initial knowledge of attitudes and behavior about the dangers of smoking for 30 minutes. After 2 weeks of implementing the pretest, students were given intervention in the form of Comic-based Photonovella media about the dangers of smoking with the following procedures: introduction to educational material Comic-based Photonovella media, discussion. This intervention was carried out for + 60 minutes. Posttest This test was carried out 2 weeks after the intervention. This test is intended to assess students' ability to understand the dangers of tobacco through Comic-based Photonovella media. This intervention lasts 30 minutes

In the control group, students received education about the dangers of smoking through posters. Students receive a test in the form of a questionnaire to assess students' initial knowledge of attitudes and behavior about the dangers of smoking for 30 minutes. After 2 weeks of carrying out the pretest, students will be intervened in the form of a presentation about the dangers of smoking with the following process: providing material and discussion. This intervention lasted 60 minutes. This posttest was carried out 2 weeks after the intervention. This test is intended to assess students' understanding of the dangers of smoking through posters. This intervention lasted 30 minutes.

4. FINDINGS AND DUSCUSSION

Students were divided into two groups: treatment group and comparison group, according to the non-randomized group pretest and posttest approach. Class, Age, and Gender are the demographics of research respondents. The details are presented in table form below.

Table 4.1 Frequency Distribution of Respondent Characteristics in Groups(f= 90)

Characteristics	Control Group		Intervention Group	
	Amount	%	Amount	%
Gender				
Man	23	51.1	23	51.1
Woman	22	48.9	22	48.9
Total	45	100	45	100

Table 4.2 Frequency Distribution of Respondent Characteristics in Groups(f= 90)

Variable	Treatment Group				Comparison Group			
	Pre-test		Post-test		Pre-test		Post-test	
Knowledge	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Not good	16	35.5	0	0	12	26.6	6	13.3
Good	29	64.5	45	100	33	73.4	39	86.7
Attitude								
Negative	19	42.2	0	0	21	46.6	7	15.5
Positive	26	57.8	45	100	24	53.4	38	84.5
Behavior								
Not good	21	46.6	0	0	22	48.8	6	13.3
Good	24	53.4	45	100	23	51.2	39	86.7

Both the treatment group and the comparison group showed higher scores on the post-test, as shown in table 2 above. In the treatment group before the intervention, the level of poor knowledge of respondents was 16 people (35.5%) and the level of good knowledge was 29 people (64.5%). However, in the treatment group after intervention, all respondents had a good level of knowledge (100%).

In the previous comparison group, the level of poor knowledge of respondents was 12 (26.6%) and the level of good knowledge was 33 (73.4%). However, in this comparison group, the level of knowledge of respondents increased to 39 (86.7%) after the intervention. Therefore, the treatment group experienced more improvement on this knowledge variable than the comparison group. Overall, the treatment or intervention group experienced an increase of one hundred percent in knowledge, attitudes and behavior variables.

Table 4.3 Frequency Distribution of Respondent Characteristics in the Treatment Group

Variable	Period	<i>f</i>	Descriptive		Bivariate	
			Mean	elementary school	Z	Sig
Knowledge	Pre-test	45	9.35	0.652	-6,195	0,000
	Post-test	45	10.39	0.777		
Attitude	Pre-test	45	10.06	0.503	-5,136	0,000
	Post-test	45	10.36	0.320		
Behavior	Pre-test	45	9.25	0.827	-6,087	0,000
	Post-test	45	10.24	0.360		

Based on the results of the data analysis above, the average knowledge of students in the treatment group before the intervention was 9.35 with a standard deviation of 0.652, and the average knowledge of students in the treatment group after the intervention was 10.39 with a standard deviation of 0.777. Therefore, the average increase in knowledge is 1.04, and the sig. (2 tailed) = 0.000 < 0.05. This shows that the level of knowledge of students in the treatment group before and after the intervention is very different. In the attitude variable, the average attitude of students in the treatment group before the intervention was 10.06 with a standard deviation of 0.503. In the treatment group after the intervention, the average attitude increased to 10.36 with a standard deviation of 0.320. The value of the attitude variable increased by 0.3 and the sig. (2-tailed) = 0.000 < 0.05. The results of the analysis showed that the attitudes of students in the treatment group changed significantly after the intervention was given.

After the intervention, the student behavior score in the treatment group averaged 9.25 with a standard deviation of 0.827, and the student behavior score in the treatment group after

the intervention increased to 10.24 with a standard deviation of 0.360. The value before and after intervention for students in the treatment group was 0.99, and the sig. (2-tailed) is 0.000. Thus, it can be concluded that the behavior of students in the treatment group improved significantly.

The results of the analysis using the Wilcoxon test in this study showed that there was significance or increase between the average pre-test and post-test scores in the treatment group. The significance figures in the table show that health education uses Comic-based Photonovella media has an impact on students' knowledge, attitudes and behavior.

Table 4.4 Frequency Distribution of Respondent Characteristics in the Comparison Group

Variable	Period	f	Descriptive		Bivariate	
			Mean	elementary school	Z	Sig
Knowledge	Pre-test	45	7.33	0.435	-4,022	0,000
	Post-test	45	8.08	0.416		
Attitude	Pre-test	45	8.13	0.424	-0.288	0.192
	Post-test	45	8.14	0.428		
Behavior	Pre-test	45	7.14	0.664	-4,087	0,000
	Post-test	45	7.94	0.494		

According to the table above, the average knowledge of students in the comparison group before intervention was 7.33, with a standard deviation of 0.435. Then, the average knowledge of students in the comparison group after the intervention increased by 0.75 with a sig value. (2-tailed) = 0.000 < 0.05, which indicates that there is a significant difference in the level of knowledge of students in the comparison group.

In the attitude variable, the average score of students in the comparison group before the intervention was 8.13 with a standard deviation of 0.424, while the average score of students in the comparison group after the intervention increased to 8.14 with a standard deviation of 0.428. Sig value. two tails = 0.192 is greater than 0.05. There were no significant changes in the attitudes of students in the comparison group, according to the results of the analysis of attitude variables.

Meanwhile, the student behavior score in the comparison group before the intervention was 7.14 with a standard deviation of 0.664, and the student behavior score in the comparison group after the intervention increased to 7.94 with a standard deviation of 0.494. The difference in student behavior scores in the treatment group before and after the intervention was 0.8, with a sig. (2-tailed) = 0.000. Thus, it can be concluded that the behavior of students in the comparison group improved significantly.

The results of the Wilcoxon test on the comparison group data showed that health education was not used Comic-based Photonovella media or conventional methods (posters) improve students' knowledge and behavior. However, the attitudes of the comparison group students did not change significantly.

Table 4.5 Analysis Results (Mann Whitney U Test) Differences in Values Between the Treatment Group and the Comparison Group

Variable	Research Group	<i>f</i>	Mean Rank	Z	Sig
Knowledge	Treatment	45	37.26	-3,525	0.007
	Comparison	45	49.74		
Attitude	Treatment	45	41.81	-1,645	0.217
	Comparison	45	45.19		
Behavior	Treatment	45	38.05	-3,065	0.024
	Comparison	45	48.95		

The statistical test results for the knowledge variable show that the sig. (2-tailed) = $0.007 < 0.05$, which indicates that there is a significant difference between the values of the treatment group and the comparison group. For the attitude variable, the sig value. (2-tailed) = 0.217. These figures indicate that there is no significant difference in students' attitudes towards the treatment group and the comparison group. Meanwhile, the behavioral variable has a sig value. (2-tailed) = 0.024, which indicates that the behavior of students in the treatment group is better than the comparison group.

Overall, after the intervention, the treatment group or group of students who received health education through Comic-based Photonovella media achieved better results compared to the group of students who received education by conventional methods or posters only.

The results of data analysis showed that the level of knowledge in both the treatment and comparison groups increased at the post-test; however, the post-test score of the treatment group increased more (35.5%) than the post-test score of the comparison group (19.04%). This shows that using Comic-based Photonovella media more effective in increasing students' knowledge about the dangers of smoking. Problems related to children's smoking behavior cannot be separated from several factors, including knowledge, attitudes, friendships and easy access to smoking behavior. This is in line with the results of Ary Irfan's research in 2022 showing that there was an increase in the average knowledge value before and after the intervention in the intervention group, namely 16.06. The results of the t-dependent statistical test showed a p value of 0.002 (< 0.05) so it was concluded that there was a significant difference in the students' knowledge scores in the intervention group, before and after the intervention. The results of independent t-statistical testing show a p value of 0.015 (< 0.05) so it can be

concluded that there is a significant difference in knowledge scores in the control group and the intervention group.(Irfan, 2022)

This finding is in line with research by Naimah et al. (2021), who found that pop-up books can be used in learning because they greatly increase students' knowledge about how to maintain health and adopt a clean and healthy lifestyle.(Midwifery et al., 2021).In research conducted at SDN 001 Samarinda, Tasya and Sunarti (2019) also found that the use of pop up book media in health education had an impact on students' knowledge about balanced nutrition. This is due to the fact that the sense of sight has a better ability to process health information found in pop up book media.(On et al., 2020)

In addition, research conducted by Beker et al. in Mandesa et al. (2014) supports these findings, stating that the use of media in health education has a significant effect on increasing knowledge. Health education has a positive effect on behavior change because learning is a transformation from not knowing to knowing.(Events et al., 2014)

In their research, Made Martini et al. (2020) supports the above statement, stating that the use of media in health education is more effective because it helps the target understand the material, creates interesting images, and helps them understand what is written. (Market & Buleleng, 2020)

Knowledge is the result of recognizing an object through human senses (eyes, nose, ears and skin) or the result of human perception. The subject's attention and the duration of perception influence the resulting knowledge. Experience, educational and learning processes, and personal media are some of the sources of personal knowledge, which are stored in memory through the five senses. Without knowledge, people cannot make decisions about problems and decide what to do.

The results of data analysis show that students' attitudes in both the treatment and comparison groups improved in the post-test. The treatment group's post-test score was 42.2 percent higher than the comparison group's post-test score of 15.5 percent. This shows that the use of humorous Photonovella media to teach health is more effective in increasing students' awareness about the dangers of smoking.

Research conducted by Ningtyas et al. (2019), who discussed the development of pop-up books for the science subject Chapter Water Cycles and Natural Events as Strengthening Students' Cognition, found that using pop-up books in education can increase students' positive attitudes. In addition, students' attitudes towards learning are considered different from conventional learning with media.(Vol & May, 2019)

The research results of Dewanti et al. (2018) concerning the Development of Pop Up Book Media for Learning the Environment Where I Live for Class IV SDN 1 Pakuaden, in Ponorogo Regency, shows that students' attitudes become better after learning using pop up book media. After education, these results indicate an increase in learning goals. (Learning et al., 2018)

Furthermore, according to the research findings of Mustikawati et al. (2021) regarding Increasing Knowledge and Attitudes Regarding Clean and Healthy Living Behavior Through Health Promotion Efforts in Schools, the use of media, including health instructions, will significantly influence student perceptions. (School, 2021)

Based on the data collected, the attitudes of students in the treatment group and the comparison group were not much different in the pre-test. However, the post-test results of the two research groups were very different. Researchers believe that the use of comic-based Photonovella media in health education is more effective than the use of posters alone in increasing students' awareness about the dangers of smoking. Theory and previous research findings also support researchers' beliefs about the impact of using this media in health education. Students' attitudes are influenced by many factors, both internal and external, such as the interesting Photonovella media.

The results of data analysis show that an increase occurred in the behavior of students in the treatment group and comparison group. The behavior of students in the treatment group improved by as much as This shows that the use of humorous Photonovella media to teach health is more effective in increasing students' awareness about the dangers of smoking

In accordance with research findings by Naimah et al. (2021), the use of pop-up books is effective in the learning process because it increases children's knowledge, attitudes and behavior in maintaining health when PHBS is used. (Midwifery et al., 2021).

According to Green (1980), drivers can influence behavior. Included in this category are health facilities, health facilities and special supporting resources⁴⁶. Therefore, researchers believe that Photonovella, comic-based media, can help students understand the dangers of smoking.

5. CONCLUSIONS AND RECOMMENDATIONS

1. Both the treatment group and the comparison group showed increased awareness of students at SMP 17 Jambi City about the dangers of smoking both before and after the intervention.

2. Health education using comedy-based Photonovella media had a significant impact on students' awareness about the dangers of smoking at school in the treatment group. Students are more aware of the dangers of smoking.
3. To make the learning process more interesting and learning objectives better achieved, teachers and students can use alternative learning media such as comic-based Photonovella.

6. ADVANCED RESEARCH

Comedy-based Photonovella media used in groups is an obstacle to this research. When media is used in groups, respondents may not be able to fully focus and have to share. This may impact the outcome of the intervention. Comic-based Photonovella media takes quite a long time because it requires paper with a special thickness. In terms of respondents, this study only involved 90 junior high school students, which may not represent actual conditions.

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