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EFFECT OF HEALTH EDUCATION OF SAFETY RIDING USING AUDIOVISUAL MEDIA ON KNOWLEDGE, ATTITUDES AND SUBJECTIVE NORMS OF JUNIOR HIGH SCHOOL STUDENTS IN SAMARINDA INDONESIA

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ABSTRACT

Background: Traffic accidents are the main cause of death for adolescents aged 16-19 years. Teenagers in junior high school age are very vulnerable to traffic accidents. The importance of giving safety riding health education to junior high school students is to prepare them in the active phase of riding in an effort to prevent traffic accidents.

Objective: To determine the effect of health education about safety riding using audiovisual on the knowledge, attitudes and subjective norms of VII grade students of the Junior High School of 32 Samarinda, Indonesia.

Methods: This research employed a quasi-experimental with a non-equivalent pretest-posttest design, with a sample of 40 students in each intervention and control group selected using purposive sampling technique. Data were analyzed using Mann-Whitney test and Independent t-test.

Results: There were significant differences in knowledge, attitudes, and subjective norms between the intervention and control groups (p -value = 0.000).

Conclusion: The use of audiovisual is effective to provide health education about safety riding on the level of knowledge, attitudes, and subjective norms among junior high school students.

Keywords: audiovisual, safety riding, adolescent, health education

BACKGROUND

More than 1.25 million people died from traffic accidents every year. Traffic accidents often occur at the age of 15-29 years, and are a major cause of teenage deaths. The death toll from traffic accidents is 90% in developing countries, even though developing countries only have about 54% of vehicles in the world. As many as 50% of victims who died on the road are vulnerable road users, namely motorbike riders, cyclists, or pedestrians. If

there is no ongoing effort to deal with the problem, it can be predicted that traffic accidents will be the seventh cause of death by 2030 ([World Health Organization, 2018](#)).

Non-natural accidents occur in Indonesia, namely transportation accidents by 26% ([Ministry of Health of the Republic of Indonesia, 2015](#)). Samarinda city is the third largest number of traffic accident cases and

ranked first in the number of fatalities in traffic accidents in East Kalimantan Province in 2015, recorded 196 victims including 54 fatalities and 77 seriously injured ([East Kalimantan Statistic Center, 2016](#)).

The victims of traffic accidents in 2016 were recorded as many as 118 people including 38 fatalities, 29 victims of serious injuries, and 41 minor injuries from the cases of motorbike traffic accidents among those aged 10-15 years as many as 10 people and ages 16-30 30 years old ([East Kalimantan Communication and Information Agency, 2017](#)). The age group of adolescents 16-20 years old is the second highest age group that experiences motorbike accidents which reached 18.4% ([Anas & Manullang, 2017](#)).

The main factors that cause motorized accidents include underage, low knowledge, attitude of motorists who do not have a driving license and do not use helmets, and low driving experience ([Tumwesigye et al., 2016](#); [Woratanarat et al., 2013](#)). Another research to mention states that behavior when driving is unsafe which includes the behavior of breaking traffic lights in yellow, calling, texting, and smoking while driving, and driving more than 2 people is a factor in traffic accidents on students ([Setyowati et al., 2019](#)).

It is still found that many underage riders in urban or rural areas. The factor that causes underage adolescents living in rural areas to be more courageous to ride a motorbike is that in rural areas polices are not optimal in giving sanctions, parents facilitate and support children riding motorbikes, ignorance of the surrounding community towards underage teenagers who ride motorbikes, and environmental conditions that make children ride a motorbike ([Nurlia et al., 2017](#)).

The application of audiovisual in a learning process has a positive influence on student learning outcomes ([Nasrullah et al.](#)). The significant effect in improving student learning outcomes is by applying learning through audiovisual media ([Aprilia, 2015](#)). A previous research revealed an increase in the knowledge of adolescents after receiving health education

through video ([Imran, 2017](#)). However, there are limitations to previous research regarding health education through the media, especially on audiovisual media about safe driving on the level of knowledge, attitudes and motivation in junior high schools on the outskirts of the city.

The Junior High School of 32 (or called *SMPN 32*) is one of the junior high schools on the outskirts of Samarinda with 336 students. As many as 26% of students ride motorbikes to schools with unsafe driving, which has a higher risk of traffic accidents. It is important to provide health education about safe driving to prepare students for the active phase of driving. The purpose of this study was to determine the effectiveness of the use of audiovisual media in the form of animated films about safe driving on the level of knowledge, attitudes and subjective norms of students at SMPN 32 Samarinda.

METHODS

Study design

This was a quasi experimental study with non-equivalent pretests and posttest designs.

Setting and sample

The study was conducted on Monday, March 25, 2019 at SMPN 32 Samarinda, East Kalimantan Province, Indonesia. The population in the study was 98 students of class VII with a sample of 40 people for each group (intervention and control group) selected using a purposive sampling technique. The inclusion criteria were the students who were willing to take part in research activities, and students who were recommended by the school principal in the curriculum to take part in the activity.

Instrument

The instrument in this study was a questionnaire containing questions to measure knowledge variables and statements to measure attitudinal variables and subjective norms. The knowledge variable uses multiple answer choices with the value of correct answer is 1 and the wrong answer is 0, with the highest score of 15 and the lowest score of 0. Attitude variables

and subjective norms use the Likert scale 1-5. The highest value for attitude is 80 and the lowest is 16. The highest value for the subjective norm variable is 45 and the lowest is 9. The instruments have been tested to obtain the validity and reliability among students at SMPN 23 Samarinda on Friday March 22, 2019. The validity results showed that, of 45 items questions, only 35 items had Pearson correlation > 0.3494 and 10 question items had Pearson correlation < 0.3494 . The reliability results showed Cronbach's alpha of 0.838.

Intervention

The audiovisual media for health education of safety riding was produced by the researchers with a duration of 8 minutes 4 seconds. The procedure carried out in the intervention group study included explaining the research activities, filling out informed consent, doing pretest, having audiovisual media, doing posttest, audiovisual media assessment, and discussing. There was no intervention for the control group. The educational materials related to safety riding were obtained from the Law of the Republic of Indonesia No. 22 of 2009 on Road Traffic and Transportation ([The House of Representatives of the Republic of Indonesia, 2009](#)), and the driving health materials were obtained from the Directorate General of Public Health, Ministry of Health of the Republic of

Indonesia in 2017 on healthy driving tips ([Directorate General of Public Health, 2017](#)).

Data analysis

Univariate data analysis was conducted to describe the characteristics of the sample including the identity of the sample (gender, age, class, driver's license ownership), driving history (motorbike riding experience, traffic accident experience, police ticketing experience), and safe driving information sources. Bivariate data analysis used Mann-Whitney test for knowledge and attitude variables. Independent t-test was used for data analysis of subjective norm variables. Data were analyzed with a 95% probability level ($\alpha = 0.05$).

Ethical considerations

This research was reviewed and approved by the Health Research Ethics Commission, Faculty of Medicine, Mulawarman University, Samarinda Number: 18 / KEKP-FK / III / 2019. An explanation of the confidentiality of the data and the identity of the subject of the study was carried out, and informed consents were given to the subject of the study prior to data collection. The control group was not given health education through audiovisual media, but for ethical considerations, after having posttest, the control group was given health education.

Table 1 Characteristic of the Respondents

No	Characteristic	Intervention Group		Control Group	
		n = 40	%	n = 40	%
1	Characteristics of respondents				
	Sex				
	Male	15	37.5	16	40
	Female	25	62.5	24	60
	Age				
	12 years old	18	45	12	50
	13 years old	18	45	22	35
	14 years old	1	2.5	4	10
	15 years old	2	5	2	5
	16 years old	1	2.5	0	0
	Class				
	VII A	21	52.5	0	0
	VII B	0	0	19	47.5
	VII C	0	0	21	52.5
	VII D	19	47.5	0	0
	Ownership of a driver's license	0	0	0	0

No	Characteristic	Intervention Group		Control Group	
		n = 40	%	n = 40	%
2	Riding history				
	First age of riding				
	9 years old	4	10	3	7.5
	10 years old	12	30	9	22.5
	11 years old	8	20	16	40
	12 years old	9	22.5	11	27.5
	13 years old	1	2.5	1	2.5
	14 years old	2	5	0	0
	Riding a motorbike to school				
	Yes	17	42.5	17	42.5
	No	23	57.5	23	57.5
	Reasons of riding a motorbike to school				
	Nobody drives	4	10	1	2.5
	Distant distance from home	3	7.5	2	5
	Get to school quickly	10	25	14	35
	History of traffic accident	17	42.5	10	25
	Being ticketed by police	1	2.5	1	2.5
3	Resources of safety riding				
	Parent	34	85	29	72.5
	Teacher	33	82.5	25	62.5
	Friends	12	30	15	37.5
	Society	24	60	19	47.5
	Police	17	42.5	18	45
	Health workers	12	30	8	20
	Newspaper	19	47.5	8	20
	Magazine	15	37.5	10	25
	Textbook	26	65	19	47.5
	Leaflet/Brochure	18	45	6	15
	Poster	15	37.5	10	25
	Television	29	72.5	26	65
	Film	18	45	15	37.5
	Internet	30	75	22	55
	Social Media	33	82.5	21	52.5
	Short message (SMS)	10	25	5	12.5

Table 2 shows that the average knowledge in the intervention group was 55.93 and in the control group was 25.08, with the Mann-Whitney value of 183 (p -value 0.000). Average attitude ratings in the intervention group was

51.73 and in the control group was 29.28, with the Mann-Whitney value of 351 (p -value 0.000). And Table 3 shows that the average difference between the intervention and control groups was 8.9 with p -value 0.000.

Table 2 Statistical Results of the Knowledge and Attitude of the Respondents

Group	n	Mean Rank	Mann-Whitney	p-value
Knowledge				
Intervention	40	55.93	183	0.000
control	40	25.08		
Attitude				
Intervention	40	51.73	351	0.000
control	40	29.28		

Table 3 Statistical Results of the Subjective Norm of the Respondents

Group	n	Mean	Mean Difference	p-value
Intervention	40	7.61	8.9	0.000
Control	40	-1.27		

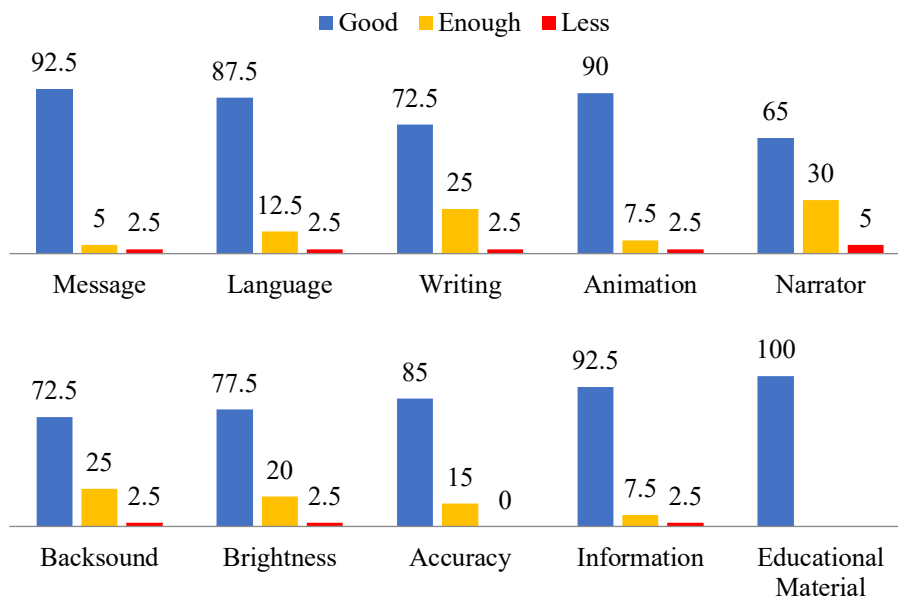


Figure 1 Distribution of Evaluation of Audiovisual Aid

Figure 1 shows that there were 6 criteria that were considered good by more than 80% of students including health education material (100%), clarity of material content / message (92.5 %%), information presented (92.5%), animated images (90 %) language usage (87.5%), and image accuracy (85%).

DISCUSSIONS

Findings showed that the intervention group and the control group had different levels of knowledge. The level of knowledge, attitudes and subjective norms in the intervention group was better than the level of those in the control group. This finding was in line with previous studies ([Aeni et al., 2015](#); [Imran, 2017](#); [Meidiana et al., 2018](#); [Nandipinta, 2013](#); [Nurmilah, 2017](#); [Siregar, 2018](#); [Yanti & Dewi, 2015](#)), revealed that there is a significant difference in the average knowledge of the intervention and control group after given health education using video or audiovisual media. The average knowledge of the intervention group (55.93) was higher than the average of knowledge of the control group (25.08). This result is supported by a previous study mentioned that a person can remember from what is heard and seen simultaneously

through video, which could obtain a power level of recall of as much as 50% ([Yee, 1995](#)).

Findings also showed that there was a significant difference in the attitude of students between intervention and control group, which the attitude of students in the intervention group (51.73) were better than the attitude of those in the control group (29.28). This was similar with previous studies revealed that the students who received health education has increased attitude than those who did not receive health education ([Hardinawanti et al., 2018](#); [Madinah et al., 2017](#); [Peyman & Jangi, 2015](#)).

In addition, the results of this study also showed that there was a significant difference in the subjective norms between both groups. The average difference shows the value of subjective norms of the intervention group (7.61) was higher than it in the control group (-1.27). This result confirms previous studies that there was an effect of health education through audiovisual media on the subjective norms ([Ebrahimipour et al., 2016](#); [Eslamimehr et al., 2017](#); [Jalambadani et al., 2018](#); [Safitri & Arif Widodo, 2018](#); [Tafti, 2018](#)).

The results of this study also showed that the largest presentations of the sources of

information received by students about safe driving were originated from parents and teachers. However, the knowledge that has been obtained does not guarantee the students would apply safe driving behavior. The students who did not have a driving license and allowed to ride a motorbike were caused by the tendency of permissive attitudes of parents by allowing something that is not supposed to be through the provision of motorcycle facilities (Rozali, 2017). In addition, the environmental factors at home and school are also considered a source of formation of intention in riding a motorcycle. Children under the age of 17 who ride a motorbike psychologically did not have emotional stability because they were still entering the development phase, so that parents and teachers act as directors in giving examples of actions that should be followed by the children (Rozali, 2017).

The results of this study add the new knowledge that the audiovisual media could communicate messages quickly and effectively in the provision of health education. A study stated that someone will be remember as much as 20% of what is heard, amounting to 30% of what is seen, and able to remember from what is seen and heard by 70% (Kholid, 2018). The learning process through audiovisual media provides high success in improving learning processes and outcomes, in terms of knowledge, attitude, and subjective norms (Asmara, 2015; Nasrullah et al.).

In this study, we also evaluated the audiovisual media used as intervention. The audiovisual media were assessed by students objectively based on the opinions of each student. Clarity of material content and messages was assessed as good (92.5%), sufficient (5%) and less (2.5%). The message of the material presented on the video was considered good because there were pictures and sounds to explain the contents.

The safety riding material aspects were also considered good (100%). Learning media channel information was clear and easily understood by the students. A previous study stated that the learning media in the form of

videos must provide visual, audio, and interesting information so that the students are interested in learning and not getting bored during the learning process (Kusuma et al., 2015). However, the audiovisual media can increase interest, desire, motivation, and stimulate students to learn (Kholid, 2018). Additionally, the narrator's voice was judged to be good with a percentage below 70%, which because of unclear voice of the speakers. Further study needs to pay attention to this variable.

CONCLUSION

There are differences in the average of knowledge, attitudes, and subjective norms of students between the intervention group and the control group with p -value of 0.000. The levels of knowledge, attitudes, and subjective norms in the intervention group were higher than those in the control group. The audiovisual media used in the delivery of health education is very effective in increasing students' knowledge, attitudes, and subjective norms about safety riding at junior high school students.

Declaration of Conflicting Interest

There is no conflict of interest.

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