

ORIGINAL RESEARCH

SCHOOL HEALTH PROMOTION: A QUASI-EXPERIMENTAL STUDY ON CLEAN AND HEALTHY LIVING BEHAVIOR AMONG ELEMENTARY STUDENTS IN JAYAPURA, PAPUA, INDONESIA

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Abstract

Background: The Indonesian government has launched a clean and healthy living behavior program as one of the efforts for school health promotion. However, the healthy behaviors of the elementary students remain low.

Objectives: This study aimed to examine the effect of audiovisual-based education on the knowledge and attitudes of clean and healthy behavior in elementary students.

Methods: This was a quasi-experimental study with a pretest-posttest comparison group design conducted from 1 October to 17 October 2018. A total sample of 272 students was selected using purposive sampling, with 136 assigned in an experimental group (audiovisual group) and a comparison group (poster only group). Knowledge and attitudes of clean and healthy living behavior were measured using validated questionnaires. Data were analyzed using a paired t-test and independent t-test.

Results: There was a significant effect of the interventions given in the experimental and comparison group on knowledge and attitude of clean and healthy living behavior ($p < 0.05$). However, the experimental group showed a higher mean score compared to the comparison group in knowledge and attitudes, which indicated that the use of audiovisual-based education was more effective than the use of poster alone in improving the knowledge and attitudes of clean and healthy living behavior.

Conclusion: The students who received audiovisual-based education had higher knowledge and attitudes of clean and healthy living behavior than those who only received poster-based education. This study provides input for pediatric and community nurses to provide better health education for the community, specifically for school health promotion.

KEYWORDS

health education; health behavior; knowledge; attitudes; students; Indonesia; nursing

BACKGROUND

Clean and healthy living behavior, or called *Perilaku Hidup Bersih dan Sehat* (PHBS), is a set of actions that make a person or family able to help themselves maintain their health ([Proverawati & Rahmawati, 2016](#)). Inappropriate PHBS can cause diarrhea and other health problems ([Nazliansyah et al., 2016](#)). Besides, according to [Danari et al. \(2013\)](#) and [Koem \(2015\)](#), lack of physical activity, lack of consuming fruits and vegetables, excessive food portions, and fast food intake in children result in overweight or obesity.

PHBS is one of the programs conducted by the Indonesian government for health promotion. However, based on the Basic Health Research of [Ministry of Health of the Republic of Indonesia \(2013\)](#), elementary children who performed PHBS were low, such as correct handwashing with soap was 47%, consuming risky foods once per day (sweet foods

53.1%, salty 26.2%, fatty 40.7%, burned 4.4%, preserved animals 4.3%, flavoring 77.3%, coffee 29.3%, and caffeine other than coffee 5.6%), and doing physical activity gratified as active was 73.9% and less active was 26.1%. The acceptable standard results of the PHBS criteria are at 32.3%, with the highest proportion of DKI Jakarta (56.8%) and the lowest in Papua (16.4%).

Data from [Jayapura City Central Statistics Agency \(2013\)](#) show that the implementation of PHBS in the Elementary School of Inpres Bertingkat Perumnas 1 Waena was still not optimal. Of 564 existing students, 300 students (53.1%) lacked an understanding of the importance of handwashing correctly and adequately, and 264 students (46.9%) did not do hand washing correctly. There was a lack of students' understanding in choosing snacks at school and a lack of active students in physical activity, indicating poor knowledge.

Knowledge is the result of knowing, which occurs after sensing the object, and is influenced by the intensity of the attention of perception because of understanding (Notoatmodjo, 2010; Tuyen, 2018). Yulianti (2015) found 33 of 64 students had insufficient knowledge about PHBS (51.6%). Based on the PHBS indicators, 24 students (37.5%) did not do hand washing correctly, 30 students (46.9%) did not consume healthy snacks in the school cafeteria, and 30 students (46.9%) did not do regular physical activities. A similar study conducted by Lina (2016) in the Kuranji Padang sub-district that the students had the lowest knowledge of 56.3%.

The results of a preliminary study in 1,169 students at Elementary School of Inpres Bertingkat and Elementary School of Inpres 5.81 Perumnas 1 Waena showed that the implementation of the school health unit (called *unit kesehatan sekolah* - UKS) was still not optimal. As seen from the availability of facilities to wash hands (9 units), most students did not use them properly. From the results of the interviews with the second-grade teachers, it was indicated that among 154 grade IV and V students, only 60 students (39%) did not receive information about handwashing correctly, 75 students (49%) consumed unhealthy snacks outside of school, and 19 students (12%) did not do physical activities every day. This result shows the need for students' understanding of clean and healthy behavior. One factor affecting children's knowledge is attitude (Notoatmodjo, 2010; Sunaryo et al., 2020).

Attitude is the result of object evaluation, expressed in cognitive, affective, and individual behavior or responses obtained from the learning process towards various attributes related to the object (Notoatmodjo, 2010). Research conducted by Lina (2016) shows that the PHBS indicators of students who did not choose healthy snacks in school canteens were 100%. Thus, efforts to improve knowledge and attitudes are needed, one of which is by providing health education.

Health education is a form of business planned to improve individual or community health through mentoring, learning, and training activities to improve knowledge and attitudes physically, socially, and environmentally (Efendi & Makhfudli, 2009; Maulana, 2009; World Health Organization, n.d.). The more information that is known, the higher the ability of students to behave healthy lives. The roles of nurses should be implemented as educators, role models, and at the same time as facilitators in the delivery of education.

Vio et al. (2014) states that students' knowledge and attitudes can be increased after given information. Also, Amaya-Castellanos et al. (2015) revealed that educational media is used to improve students' knowledge and attitudes in doing physical activities and choosing foods that do not cause obesity. One form of education that can be used is through audiovisual media. Audiovisual media is considered effective in increasing knowledge and attitudes (Brugués et al., 2016). Audiovisual media in the delivery of PHBS education in the form of videos can present easily understood information. Simultaneously, the poster is a precise visual combination and draws one's attention to act from what is seen (Troseth & Strouse, 2017). Therefore, this study aimed to determine the effect of health education using audiovisuals (videos and posters) on the knowledge and attitudes of PHBS in elementary school students in Jayapura, Papua, Indonesia.

METHODS

Study Design

This was quasi-experimental design research with pretest-posttest with a comparison group design.

Respondents

The respondents in this study were students in grades 4 and 5 from two elementary schools in Waena Inpres State Elementary School, including Elementary School of Inpres Bertingkat Perumnas 1 Waena as an experimental group and Elementary School of Inpres 5.81 Perumnas 1 Waena as a control group. There were 272 students selected using purposive sampling, which 136 students assigned in each group. The inclusion criteria of the respondent were all students in grades 4 and 5, willing to become a respondent, and could write and read fluently. The exclusion criteria were students who did not attend school at the time of the research data collection.

Instrument

The instrument used in this study was questionnaires of knowledge and attitudes of students about PHBS at schools, modified from Listyowati (2012) and Proverawati and Rahmawati (2016), and the Ministry of Health of the Republic of Indonesia (2011). The knowledge questionnaire consisted of 20 questions in the form of multiple check questions (MCQ), using the Guttman scale in the form of right and wrong choices. The highest value of the total answers is 20, with a range of scores from 0 to 20. Knowledge assessment is said to be "good" if the value of the knowledge score is \geq mean and student knowledge is "lacking" if the value of the knowledge score is $<$ mean. The questionnaire consisted of four domains, namely PHBS at schools (definition, benefits, training targets), washing hands with soap (definition, benefits, right time, how to wash hands properly), consuming healthy snacks (definition of healthy snacks, causes of consumption of snacks unhealthy, the definition of balanced nutritious food), and perform daily physical activity (definition, benefits, kinds of physical activity, advantages of doing the physical activity). Person Product Moment test and Cronbach's alpha were used for the validity and reliability of the questionnaire. The results of the validity test showed that the calculated *r*-value of each item statement was above 0.361, and the Cronbach's alpha value was 0.88.

The attitude questionnaire consisted of 15 questions using the Likert scale. Positive statements used favorable answers (1=strongly disagree, 2= disagree, 3= agree, 4= agree) while negative statements used unfavorable responses (4= strongly disagree, 3= disagree, 2= agree, 1= agree), with a range of attitude score values 0 - 60. Attitude assessment is said to be "positive" if the value of the attitude of students is \geq mean, while attitude is said to be "negative" if the value of the attitude score of students is $<$ mean. The questionnaire consisted of the same domains like the knowledge questionnaire. The questionnaire was valid with the *r*-value of each statement item was above 0.361 and reliable with the Cronbach alpha value was 0.89.

Intervention

The intervention was carried out in the experimental group by providing audiovisual-based education using video and posters about clean and healthy behavior (PHBS) for 45 minutes after the pretest. The health education was done at a different time from the agreement with the control and experimental groups. The video's duration was 4

minutes 57 seconds, for 2 x 5 minutes with the topics of PHBS materials (handwashing correctly, choosing healthy snacks, and doing physical activities at schools). The use of poster media for health education was implemented for 40 minutes. The respondents were asked to study independently for ten days, and the poster was posted in each class.

The comparison group was given only poster-based education about PHBS with the topics including handwashing correctly, choosing healthy snacks, and doing physical activities at school. They were also asked to learn independently for ten days.

Data Collection

Data were collected from 1 October 1 to 17 October 2018 by researchers and six research assistants. The research assistants were diploma nursing students. Their roles included distributing questionnaires, assisting in filling out questionnaires, and checking the completeness of the respondents' answers during data collection. The pretest was done one day before the intervention, while the posttest was done ten days after the intervention.

Data Analysis

Univariate analysis was used on demographic characteristics variable to describe its frequency distribution and proportions such as student

age, sex, father and mother education, occupation, ethnicity, and information exposure. As data were normally distributed (>.05 using Kolmogorov Smirnov), Paired sample t-test and independent-sample t-test were used for data analysis.

Ethical Consideration

The research was conducted after receiving an approval letter from the Ethics Committee of the Biomedical Research Ethics Committee, Medical Faculty, Universitas Gadjah Mada (approval Ref: KE / FK / 1041 / EC / 2018 dated 26 September 2018). Each respondent signed informed consent before data collection. Before signing the informed consent, the researchers first explained the purpose of the study and the confidentiality of the data.

RESULTS

Characteristics of the Respondents

The majority of the respondents in the experiment and comparison groups were females, and their parents had higher educations. The father's job was mostly in non-public sectors, and the mother's job was a housewife. The ethnics of being Papua or non-Papua was slightly the same. Most of the respondents had information exposure about PHBS.

Table 1 Characteristics of the Respondents (N= 272)

Characteristics	Category	Group			
		Comparison (n=136)		Experiment (n=136)	
		f	%	f	%
Early school age	7 – 9 years old	24	17.6	27	19.8
Advanced school age	10-13 years old	112	82.3	109	80.1
Sex	Male	58	42.6	62	45.6
	Female	78	57.4	74	54.4
Father's education	Elementary school	7	5.1	12	8.8
	Secondary school	52	38.2	51	37.5
	Higher education	77	56.6	73	53.7
Mother's education	Elementary school	11	8.1	15	11.0
	Secondary school	63	46.3	62	45.6
	Higher education	62	45.6	59	43.4
Father's job	Jobless	9	6.6	9	6.6
	Non-public servant	81	59.6	92	67.6
	Public servant	46	33.8	35	25.7
Mother's job	Housewife	77	56.6	83	61
	Non-public servant	31	22.8	28	20.6
	Public servant	28	20.6	25	18.4
Ethnic	Papua	58	42.6	61	44.9
	Non-Papua	78	57.4	75	55.1
Information exposure Heard about PHBS	Never	8	5.9	9	6.6
	Ever	128	94.1	127	93.4
Counseling about PHBS	Never	21	15.4	17	12.5
	Ever	115	84.6	119	87.5
Taught how to wash hand with soap properly	Never	8	5.9	9	6.6
	Ever	128	94.1	127	93.4
Taught how to choose a healthy snack	Never	9	6.6	4	2.9
	Ever	127	93.4	132	97.1
Get information on the importance of physical activity	Never	15	11.0	14	10.3
	Ever	121	88.9	122	89.7
Total		136	100	136	100

Early school age: a student who is five years old when entering grade 1 (young age)

Middle school age: a student who is seven years old when entering grade 1 (appropriate age / according to the rules)

Differences in the Students' Knowledge and Attitudes

Table 2 shows a significant effect of health education on knowledge and attitude among students in the experiment and comparison groups. The use of audiovisual (video and poster) or poster only provided a

significant difference in knowledge and attitude before and after the given intervention ($p < 0.001^*$). However, the mean difference in the experimental group was higher than the control group in both knowledge and attitude, and it was statistically significant ($p < 0.001^*$).

Table 2 Differences in the Average of Students' Knowledge and Attitudes in the Pretest and Posttest ($N = 272$)

Variables	Pretest	Posttest	Mean Difference	p-value
	Mean (min-max)	Mean (min-max)		
Knowledge				
Comparison group	12.22 (3.00 - 19.00)	16.65 (9.00 - 20.00)	4.42	< 0.001 ^{*,a}
Experimental group	11.70 (3.00 - 18.00)	17.50 (10.00 - 20.00)	5.79	< 0.001 ^{*,a}
p-value ^b	< 0.001 [*]			
Attitude				
Comparison group	41.53 (31.00 - 51.00)	48.58 (38.00 - 55.00)	7.05	< 0.001 ^{*,a}
Experimental group	41.77 (31.00 - 48.00)	51.27 (41.00 - 58.00)	9.50	< 0.001 ^{*,a}
p-value ^b	< 0.001 [*]			

*significance at < 0.05 | ^apaired sample t-test | ^bindependent t-test

DISCUSSION

This study aimed to determine the effect of health education using audiovisuals (videos and posters) on the knowledge and attitudes of students in the provision of PHBS compared to the health education using poster only. The results indicated that both techniques of interventions had a significant impact on the knowledge and attitudes of the students. However, those who received audiovisual-based education were significantly higher in their knowledge and attitude than those who only received poster-based education. This indicates that the use of audiovisuals (videos and posters) can effectively improve knowledge and attitudes. Our findings were in line with the study conducted by [Oktaviana \(2017\)](#), who revealed that the students' handwashing attitudes increased after given education using audiovisual media.

In this study, two-dimensional animated images and exciting videos were designed. The information given was short and clear for 45 minutes to increase the enthusiasm of students in receiving the provided education. [Troseth and Strouse \(2017\)](#) stated that videos could present information, describe processes, explain complex concepts, teach skills, shorten the time, can influence attitudes, in this case, pay more attention, understand the contents of the storyline, and can be watched repeatedly. [Brugués et al. \(2016\)](#) also stated that video is one of the most effective students learning media in the delivery of information

Knowledge related to learning is influenced by various factors from within (natural) and outside (intervention) directly or indirectly in the form of available information tools ([Budiman, 2013](#)). Information provided by using audiovisual makes the students focus more on listening actively during the process of providing education, both the presentation of videos and posters and discussion sessions. This is in line with the research of [Bieri et al. \(2013\)](#) suggest that the use of audiovisual media makes someone easily absorb the messages and experience improvements in health practices and easier to understand compared to paper media ([Van Der Meij & Van Der Meij, 2014](#)). [Albert et al. \(2007\)](#) added that audiovisual media in education could convey consistent messages and increase understanding of the material.

It is noted that the poster only was also significant in increasing the students' knowledge and attitude. It is similar to [Suirakoa and Supariasa \(2012\)](#), who revealed that the poster provides a clear visual combination and attracts one's attention to be able to act from what is seen. [Maimun and Erawan \(2017\)](#) also said that the delivery of information using poster media could improve students' knowledge, attitudes, and actions in PHBS in Kendari City, Indonesia.

Although using audiovisual to increase knowledge and attitude of the students is not new; however, this study confirms that the audiovisual media for learning purpose can be generalized. We know that Papua is the eastern part of Indonesia, where a lack of studies was conducted compared to the number of researches conducted in the central and western part of Indonesia. The use of audiovisual as a medium to convey health information is more attractive to the students directly by the senses of sight and hearing. Also, this study serves as an input for pediatric and community nurses to provide better health education for the community, specifically for school health promotion.

Limitations of the Study

Although the use of the comparison group could reduce the bias of the effect of the intervention in this study, and the characteristics of the respondents in both groups had been controlled. However, other factors might influence the knowledge and attitudes of the students, such as culture, teachers' role models, educational institutions ([Siagian et al., 2010](#)), or other factors, which should be explored in future studies. In addition, as we asked the respondents to study independently after given a direct intervention, the responses among students might be different, which could influence the results. Besides, the instruments used in this study need further validation, specifically for good psychometric properties.

CONCLUSION

The use of audiovisual and poster-based health education provided a significant effect on knowledge and attitude in the provision of clean and healthy living behavior in the experiment and control group. However, the experimental group showed a higher mean score than the control group, which indicated that audiovisual-based education was more effective than the use of posters alone to increase the knowledge

and attitudes of clean and healthy living behavior. This study serves as an input for nurses, teachers, and parents to teach and facilitate students to maintain the students' clean and healthy living behavior.

Declaration of Conflicting Interest

There is no conflict of interest to declare.

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Authors Contribution

All authors contributed equally in the design and concept, data collection, data analysis, and drafted the manuscript. All authors approved the final version of the article.

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