The Influence of Education with Audio-Visual Media on Adolescent Knowledge Level in Kaligentong Village, Gladagsari, Boyolali, Central Java About Preventing of COVID-19 Transmission

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Abstract

In early 2020, the World Health Organization announced Corona Virus Disease-19 (COVID-19) had become a global pandemic. The spread of COVID-19 is very fast and widespread because it is transmitted human to human. Knowledge about preventing the transmission of COVID-19 is very important to reduce the increase in spread of COVID-19, including among adolescents. This study aims to analyse the influence of education with audio-visual media on the level of knowledge of adolescents in Kaligentong Village, Gladagsari, Boyolali regency, Central Java about preventing the transmission of COVID-19. This is a quasi-experimental study with a non-randomized pretest-posttest design with control group. Sampling was done by purposive sampling. The data collection technique was carried out using a questionnaire that was given online using Google form. Respondents in this study were adolescents aged 15-24 years and unmarried, as many as 82 respondents who were divided into two groups, namely the control group and the intervention group. Data were analysed by Wilcoxon, Mann Whitney and intervention effect tests. The results on this study indicate the influence of education through audio-visual media on the level of knowledge of adolescents in Kaligentong Village, Gladagsari, Boyolali about preventing the transmission of COVID-19 with an effect size of 72,3% and shows a significant difference between the experimental group and the control group.

Keywords: COVID-19 prevention, adolescents, education, audio-visual media, level of knowledge

Introduction

Corona Virus Disease (COVID-19) is a disease caused by a new type of corona virus, hereinafter referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV 2). This virus is very small (120-160 nm) which mainly infects animals including bats and camels, but in this discovery, transmission between humans is the main source of transmission (Young, 2020). On December 31, 2019, the world Health Organization (WHO) China Country Office confirmed the discovery of pneumonia of unknown cause in the city of Wuhan, Hubei, China. This case continued to grow until January 2020 until it was finally known the cause of this disease, namely the type of corona virus (Kemenkes RI, 2020).

In Indonesia and in the world, the number of infections with this virus is increasing every day, with positive cases efforts are needed to break the chain of spread of COVID-19 through isolation, early detection and basic protection, namely by protecting yourself and others. Another way is by frequently washing hands with water and soap or by using mask and not touching the face area before washing hands and applying good coughing and sneezing etiquette (Directorate General of P2P of the Indonesian Ministry of Health, 2020). Efforts to prevent the spread of the corona virus require good knowledge from the public. Knowledge of preventing the spread of the corona virus disease can be done through healthy promotion and education. In the research of Solehati, Kosasih and Lukman (2017), it shows that education affects the level of knowledge. From a previous study by Mei-Jy Jeng (2020) it was stated that children of all ages are not free from COVID-19 risk. Everyone has a risk of infection after contact with someone with COVID-19. Although many studies reveal that the risk factors of adolescents are not high compared to the elderly, in the United States, there have been 149.080 cases of children < 18 years infected with COVID-19, this data was taken from February 12 to April 2, 2020. Adolescents usually do not cause symptoms when infected with this virus, so

that the prevalence of adolescents is underestimated in the currently reported data, this can also trigger the wider spread of COVID-19.

Adolescence is a period of transition from child to adult, so that adolescents have a curious attitude. Adolescents who have minimal knowledge about efforts to prevent COVID-19 can become one of the objects spread, on the other hand, if teenagers have good knowledge about efforts to prevent COVID-19, they are expected to be able to break the chain of spreading this virus. Based on this description, it is necessary to conduct research on the level of knowledge of adolescents about preventing the transmission of COVID-19 and how education affects the level of knowledge and understanding of adolescents on preventing the spread of COVID-19.

Methods

This research is a quasi-experimental study with a non-randomized pretest-posttest design with control group. Sampling was done by purposive sampling. The data collection technique was carried out using a questionnaire that was given online using Google form. The sample size was determined based on the Slovin formula. The inclusion criteria of the respondents in this study include: adolescents aged 15-24 years and unmarried and adolescents who are willing to be respondents in research. The exclusion criteria in this study were respondents who filled out the questionnaire incompletely. The respondents in this study as many as 82 respondents who were divided into two groups, namely the control group and the intervention group. Sampling was taken by purposive sampling.

This research was conducted in January 2021 in the village of Kaligentong, Gladagsari, Boyolali, Central Java Province, Indonesia. Data in this study collected by distributing questionnaires to all respondents (pretest) then providing education to the intervention group with audio-visual media, the video can be seen in URL address: https://www.youtube.com/watch?v=luRPZLOUlOs , followed by giving questionnaires back to all respondents (posttest). The questionnaires in this study tested for validity and reliability on these items. At first the statements in questionnaire amounted to 15 items, but after testing the validity and reliability, 11 valid statements were obtained.

Analysis

Univariate analysis was used to obtain an overview of the frequency distribution and proportion

of the variables studied such as gender and education level.

To find out whether there is a significant difference or not between the control group and the experimental group, a comparative hypothesis type is used using the T-test if the data to be tested is normal. If the normality of the data to be tested is not normal, then use the Wilcoxon test. Bivariate analysis done by the correlation test, that used to find out how big the relationship is between the variables in the study. The tool used in the correlation test is multiple linear regression. The variables in this study are gender and education. A correlation test was conducted to determine the relationship between gender and level of education with the level of knowledge of adolescents about preventing the transmission of COVID-19. In this study, the influence or effect of intervention was also tested to determine the effect of education on posttest results. The intervention effect test was carried out in the control group and the intervention group. The intervention effect test is calculated using this formula:

$$r = \frac{z}{\sqrt{N}}$$

Figure 1. Formula to calculate intervention effect
Description:
r = effect size
Z = conversion value of standard deviation
N = total number of respondents

The percentage of intervention effect is calculated by squaring the value of r multiplied by 100%.
The effect criteria according to Field (2009) to determine the effect size are as follows on table 1.

Table 1. The intervention effect criteria according to Field (2009)

R	%	Description
0,10	1%	Small effect
0,30	9%	Intermediate effect
0,5	25%	Big effect

Results and Discussion

This research was conducted in January 2021 in the village of Kaligentong, Gladagsari, Boyolali, Central Java Province, Indonesia. The questionnaires in this study using Bahasa Indonesia. At first the

statements in questionnaire amounted to 15 items, then tested the validity and reliability of the statements in questionnaire. The results of the validity test on the items can be seen in table 2.

Table 2. Results of validity and reliability test of questionnaires

No. of item	Statement in the questionnaires	R count	R table	Description
1	COVID-19 is a virus that originates from the coronavirus.	0,497	0,361	Valid
2	Symptoms of COVID-19 can attack the respiratory system and can also attack the digestive system, for example diarrhea.	0,466	0,361	Valid
3	Droplets are the only transmission medium for COVID-19	0,514	0,361	Valid
4	Medical masks are more effective in preventing the spread of the corona virus than using cloth masks.	0,011	0,361	Invalid
5	N95 masks are masks that function to protect users from harmful particles such as aerosol particles, droplets, and also 95% filtration from existing airborne particles.	0,335	0,361	Invalid
6	The recommended cloth mask to wear is mask that has 2 layers.	0,599	0,361	Valid
7	The first layer on a cloth mask is water resistant	0,466	0,361	Valid
8	The recommended distance in physical distancing is 1 meter.	0,466	0,361	Valid
9	Hand sanitizer can damage the viral membrane and cause the virus to no longer be active.	0,417	0,361	Valid
10	Washing hands is more effective in killing viruses than using hand sanitizer.	0,541	0,361	Valid
11	The function of the vitamin D is to increase microbial infection and increase risk factors for infection with the COVID-19 virus.	0,404	0,361	Valid
12	Vitamin C functions to increase immunity.	0,307	0,361	Invalid
13	Disinfectants can only be used on inanimate objects.	0,548	0,361	Valid
14	In addition to containing 1 part bleach and 99 parts water, disinfectants can also contain 70% ethanol.	0,074	0,361	Invalid
15	Face shield can be used as the main personal protection tool	0,590	0,361	Valid

Based on the results of the validity and reliability test (table 2), it is known that of the 15 statements there are 11 statements that are declared valid (r table > r count, which is 0,361). Four (4) items that are not valid are 4 statements about masks, disinfectants and immunity, respectively. Each item has been represented with the same material items. Reliability test result was 0,672 > 0,6. The questionnaire that was distributed to the respondents consisting of 11 valid and reliable statements items.

Respondents characteristics
1. Gender

Gender distribution of respondents is shown in table 3.

Table 3. Gender distribution of respondents

Gender	Frequency	Percentage (%)
Male	43	52,44
Female	39	47,56
Total	**82**	**100,00**

Based on the gender distribution data of the respondents, it can be seen that the majority of respondents are male with total of 43 (52,44%) and female as many as 39 respondents (47,56%).

2. Education level

Distribution of respondents' education level is shown in table 4.

Table 4. Education level distribution of respondents

Education level	Frequency	Percentage (%)
Junior high school	32	39,0
Senior high school	32	39,0
College	18	22,0
Total	**82**	**100%**

Based on the education level data of respondents, it shows that there are 32 (39%) respondents with a Junior High School. Respondents with a Senior High School as many as 32 (39%) and respondents with a college education level as many as 18 respondents (22%).

Knowledge level of respondents

1. Intervention group

The level of knowledge of respondents in the intervention group before and after education with audio-visual media can be seen in table 5.

Table 5. Knowledge level of intervention group (pretest and posttest result)

Knowledge level	Pretest		Posttest	
	Amount	Percentage (%)	Amount	Percentage (%)
Good	9	21,95	41	100
Enough	20	48,78	-	-
Less	12	29,27	-	-

The level of knowledge of the intervention group before being given education that have good level of knowledge are 9 respondents (21,95%), enough knowledge as many as 20 respondents (48,78%) and the level of knowledge that is less there are 12 respondents (29,27%). After education through media audio-visual was conducted, the level of knowledge of intervention group was good as 41 respondents (100%). This can happen because before being given education through audio-visual media, respondents did not know much about the efforts that can be taken to prevent the transmission of COVID-19, and after being given education, the level of knowledge of intervention group are increase (can be seen in the increase of posttest from pretest results). The increase in the level of knowledge of intervention group after being given education is in line with research conducted by Solehati, Kosasih, and Lukman (2017) which showed that education had an effect on knowledge.

2. Control group

The level of knowledge of respondents in the control group before and after education with audio-visual media can be seen in table 6.

Table 6. Knowledge level of control group (pretest and posttest result)

Knowledge level	Pretest		Posttest	
	Amount	Percentage (%)	Amount	Percentage (%)
Good	10	24,39	9	21,95
Enough	20	48,78	27	65,85
Less	11	26,83	5	12,20

According to table 6, the decrease in respondents who have good level of knowledge at pretest and posttest is due to similarity of pretest and posttest questionnaire. This is also because there was no education through audio visual media given to the control group. The results of the decrease in posttest results in the control group are in line with research conducted by Sudjana (2001) which showed that in control group, respondents often feel bored and are not interested in activities. This is one of the causes of the decrease in posttest results in control group.

Assumption test

1. Data normality test

The data normality test was carried out on the pretest and posttest data in the control group and the intervention group with Kolmogrov-smirnov and Shapiro-wilk test, the results can be seen in table 7.

Table 7. Data normality test results

Pretest or posttest in group	Kolmogrov-Smirnov	
	Sig	Description
Pretest-intervention group	0.032	Not normal
Posttest-intervention group	0,000	Not normal
Pretest-control group	0,011	Not normal
Posttest- control group	0,001	Not normal

From the normality test conducted unsing the Kolmogrov-Smirnov test (table 7), it can be seen that the data are not normally distributed, so it is necessary to test using the Wilcoxon test to test the differences of the pretest and posttest results. Wilcoxon test results can be seen in table 8.

Table 8. Wilcoxon test results of pretest and posttest results in intervention group and control group

Group	Sig. 2 tailed
Intervention group	0,000
Control group	0,020

The results of the Wilcoxon test in the intervention group showed that significance value is 0,000 < 0,05, it showed that there was a significant difference in the results of pretest and posttest in the intervention group. In the control group, it is known that the significance value is 0,020 < 0,05, it showed that there was a significant difference in the results of pretest and posttest in the control group.

2. Homogenity test

Homogeneity test was used to see variance between the control group and intervention group. The results of the homogeneity test can be seen in table 9.

Table 9. Results of the homogeneity test

Levene Statistic	Sig.
21,270	0,000

The significance value of homogeneity test is 0,000 < 0,005, it shows that the data is not homogeneous. So it is necessary to test using the Mann-Whitney test to find out the difference between the intervention group and the control group.

Intervention effect test

1. Initial ability difference test

The initial ability difference test was used to determine whether the intervention group and the control group had the same or different abilities. The test uses Man-Whitney non-parametric statistics. The results of the initial ability difference test from the pretest data between the control group and intervention group can be seen in table 10.

Table 10. Results of initial ability difference test

Pretest	Asymp.Sig. (2 tailed)	Description
Intervention group and control group	0,788	There is no significant difference

The results of initial ability difference test can be seen that the pretest results of the control group and the intervention group have no significant difference in initial ability (significance value 0,788 > 0,05). It shows that the two groups can be compared.

2. Test the difference between pretest and posttest scores

The difference test between pretest and posttet was conducted to determine the difference between the intervention group and the control group. The test of the difference in scores between pretest and posttest in the intervention group and the control group was carried out with the Mann Whitney statistical test. The results of Mann-Whitney U test can be seen in table 11.

Table 11. The results of Mann-Whitney U test

Difference test	Asymp.Sig (2 tailed)	Description
Intervention group and control group	0,000	Significantly different

The significance value of the Mann-Whitney U test is 0,000 < 0,05, it shows that there is a significant difference between the intervention group and the control group. The difference between the control group and the intervention group occurred because of the education through audio-visual media was given to intervention group. Audio visuals are more interesting because they contain elements of sound and images. This media is well applied because in its application it has combined both types of auditory (hearing) and visual (seeing) media. It can be conducted that audio-visual media is very media is very helpful in improving memory of the information received and increasing student in following the learning process (Andrianus, 2014).

3. Intervention effect test

The intervention effect test aims to determine the effect of educayion on posttest results. The table is the results of the calculation of the effect size test on the learning outcomes of the control group and the experimental group and the intervention group, with

the Z value taken from the Wilcoxon test (table 12). Calculation of the effect of intervention using formula in figure 1.

a. R% of control group
$$r = z/\sqrt{N}$$
$$r = -2{,}328/\sqrt{41}$$
$$r = -2{,}328/\ 6{,}4031$$
$$r = -\ 0{,}3636$$
$$\mathbf{R\%} = r^2 \times 100\%$$
$$= -0{,}3636 \times 0{,}3636 \times 100\%$$
$$= \mathbf{13{,}2\ \%}$$

b. R% of intervention group
$$r \qquad = z/\sqrt{N}$$
$$r \qquad = -5{,}471/\sqrt{41}$$
$$r \qquad = -5{,}471/\ 6{,}4031$$
$$r \qquad = -\ 0{,}8508$$
$$\mathbf{R\%} \qquad = r^2 \times 100\%$$
$$= -0{,}8508 \times 0{,}8508 \times 100\%$$
$$= \mathbf{72{,}3\ \%}$$

Table 12. The table of intervention effect

Group	Z	N	R	%	Magnitude of influence
Kontrol	-2,328	41	0,3636	13,2	Medium
Ekspermen	-5,471	41	0,8508	72,3	Big

Based on the calculation of the effect size, the effect of education is obtained with an increase in the control group by 13,2% and an increase in the intervention group by 72,3%, it showed that there is a difference between the control group and the intervention group. The effect of education on control group with showed a medium effect, whereas the effect of education with audio-visual media on the intervention group showed a big effect (table 12). The big influence of education is also influenced by the method and media of providing material. Achieving goals will be easier with the use of appropriate learning media and can increase the ease of recipients (Mardhiah, 2015).

Correlation test

The correlation test in this study was conducted to determine the correlation between characteristic of respondents based on gender and education level with the results of pretest in the two group. The correlation test conducted with multiple linear regression because here the variable X has two characteristics, namely gender and education level. The results of the correlation test obtained a significance value of education level is 0,000<0,05, it means that there is a significant influence between the education level and knowledge level (pretest results). The results of the correlation test obtained a significance value of gender is 0,362 > 0,05, it means that there is no significant influence between the education level and knowledge level (pretest results).

Research limitations

The limitation of this study is that there are variations in the education level of the respondents, so that that this study is not able to control confounding factors that can affect the level of knowledge of respondents outside the intervention given in this study.

Conclusion

There is an influence of education through audio-visual media by 72,3% on the level of knowledge of adolescents in Kaligentong Village, Gladagsari, Boyolali, Central Java about preventing the transmission of COVID-19

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