

## Research article

# The Effect of Online Education on Knowledge about Covid-19 Masks in High School Students in Jakarta: a Pre-experiment Study

Kholis Ernawati<sup>1</sup>, Fathul Jannah<sup>2</sup>, Faras Qodriyyah Sani<sup>3</sup>, Alike Rizki Pratami<sup>4</sup>, Deybi Eri Cahyani<sup>5</sup>, Khanza Isdiharana<sup>6</sup>, M. Fahmi Syah Putra<sup>7</sup>

Faculty of Medicine, Universitas YARSI, Jakarta, Indonesia

## ORCID

Kholis Ernawati: <https://orcid.org/0000-0002-3582-5294>

## Abstract.

One way to prevent the spread of the COVID-19 virus is to wear a mask in public. The purpose of the research is online education with videos and their influence on knowledge of the use of masks and how to dispose of them as an effort to prevent the transmission of COVID-19. The research design was a pre-experiment with one group pre-test and post-test design. A pre-test was carried out in the study, then counseling with video media, a question-and-answer session, and a post-test. Respondents were high school students in Jakarta with a sample size of 50 people taken by quota sampling. Data collection techniques used google form and intervention with videos shared online via Whatsapp in July 2020. Analyze data with mean difference test. The results showed that the mean difference test with the Wilcoxon rank sign test showed a value of  $p = 0.000$ , which means that counseling was an effect on increasing knowledge about masks and how to dispose of masks properly.

**Keywords:** Covid-19; Masks; Education Online; Video Media; a Pre-Experiment

Corresponding Author: Kholis Ernawati; email: [kholisernawati@gmail.com](mailto:kholisernawati@gmail.com)

Published 5 July 2022

Publishing services provided by Knowledge E

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Selection and Peer-review under the responsibility of the ICASI Conference Committee.

## 1. Introduction

The new coronavirus (nCoV-2019) made its initial appearance in December 2019 in Wuhan, China. The Centers for Disease Control and Prevention (CDC) and Chinese health authorities determined that the novel coronavirus (nCoV-19) was responsible for the 2019 Coronavirus pneumonia outbreak (COVID-19), and the virus shares a structure with the virus that causes severe acute respiratory syndrome (SARS) (SARS). Covid-19 was designated a disease epidemic by the World Health Organization (WHO) in January 2020 [1]. Covid-19 data as of July 14, 2020, was reported to have spread to 216 countries around the world, the number of confirmed cases was 12,768,307 cases, and those who died were 566,658 people [2]. Meanwhile, 76,981 confirmed cases in Indonesia, 3,656 cases died, 36,689 recovered cases, and 36,636 cases are under

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treatment [3]. Avoiding direct contact with infected patients can prevent transmission of Covid-19 [4-5]. Anyone who comes into close contact (within a radius of one meter) with someone who exhibits respiratory distress signs (coughing, sneezing) is in danger of being exposed to respiratory tract splash, which may cause infection (infectious) [4,6]. Airborne transmission of the Covid-19 virus may also occur in indoor, crowded, and poorly ventilated conditions [1,7]. WHO states basic protective measures against coronavirus, namely washing hands with running water and using soap, keeping a distance from other people at least 1 meter, avoiding touching eyes, mouth, and nose [1].

Cloth masks are not as effective as medical and N95 masks in preventing smaller particles, and these experts suggest that healthy people can use cloth masks as an infection prevention effort [8]. It is essential to properly use and dispose of masks to ensure they are effective and avoid increased transmission [9]. Behavior is a reaction or individual response to stimuli or the environment [10]. Knowledge is the most binding domain in shaping behavior. A person's knowledge is influenced by several factors, namely education level, age, occupation, socio-cultural and environmental factors [11]. A systematic review study on community knowledge and behavior in preventing the transmission of COVID-19 shows that public knowledge is related to preventive behavior, including handwashing, social distancing, hand sanitizer, use of masks, and self-isolation [12]. Several efforts to break the chain of Covid-19 transmission require good knowledge and understanding from all elements, including society. With this background in mind, this research aims to evaluate the impact of video counseling on public awareness of the proper use and disposal of masks to prevent the spread of COVID-19.

## 2. Research Method

This research used a quasi-experimental approach with a single group pre-and post-testing (pre-post test design in one group to determine the effect of counseling on respondents' knowledge of using masks and how to dispose of them). First, the study conducted a pre-test, then counseling with video media, a question-and-answer session, and a post-test. The research targets were high school students in Jakarta class XI, with a total sample of 50 people taken by quota sampling. Data collection techniques used google Forms and educational interventions using videos shared online via Whatsapp in July 2020. The extension media used the video "Counseling on Using Masks and How to Dispose of Masks Correctly," and videos will be shared via the Whatsapp social media application if the respondent has expressed willingness after filling in the pre-test. The

material in the video includes the COVID-19 virus, medical masks, cloth masks, duration of use, washing cloth masks, how to use masks properly, hand hygiene, and how to dispose of disposable masks. The pre-test and post-test data collection techniques were carried out online using the google form. Analysis of the mean difference test was carried out to determine the influence of counseling on the increase in high school student's knowledge. Data analysis used the Statistical Package for the Social Science (SPSS) application version 23.0

### 3. Results and Discussions

In this study, all respondents were class XI high school students in Jakarta. Adolescent respondents (16-17 years) were selected because adolescents are susceptible to social interactions (13) [14].

TABLE 1: Characteristics of Respondents.

Variable	Category	n	%
Gender			
	Male	16	32
	Female	34	68
	Total	50	100
Class			
	XI	11	22
	XII	39	78
	Total	50	100
age			
	16	10	22
	17	36	72
	18	4	8
	Total	50	100

Table 1 shows that most of the data on the gender variable is female (68%), the class variable is 78% class XII, and the age variable is 17 years (72% people).

Questions that can be answered correctly by respondents and the percentage increased by eight questions, namely questions about 1) The covid-19 virus is airborne, 2) Medical masks can be used more than once, 3) Cloth masks are ineffective in preventing the spread of the covid virus, 4) Cloth masks are recommended to be used for no more than 6 hours, 5) Washed cloth masks using running water, 6) If you have used a mask, you do not need to keep a distance of 1- 2 meters (physical distancing), 7) After wearing a disposable mask, throw it away immediately. A closed trash can and

TABLE 2: Frequency Distribution of Pre and Post Test Knowledge Based on Respondents' Answers for Each Questionnaire Question.

No	Questions	Pre Test		Post Test		Total
		True	False	True	False	
1	The covid-19 virus is airborne	43 (86%)	7 (14%)	45 (90%)	5 (10%)	50 (100%)
2	Healthy individuals do not need to wear a mask while leaving the home	47 (94%)	3 (6%)	47 (94%)	3 (6%)	50 (100%)
3	Medical masks can be used more than once	48 (96%)	2 (4%)	50 (100%)	0 (0%)	50 (100%)
4	Cloth masks are ineffective in preventing the spread of the covid virus	37 (74%)	13 (26%)	40 (80%)	10 (20%)	50 (100%)
5	Cloth masks are recommended to be used for no more than 6 hours	13 (26%)	37 (74%)	29 (58%)	21 (42%)	50 (100%)
6	Cloth masks must be washed after using them	49 (98%)	1 (2%)	48 (96%)	2 (4%)	50 (100%)
7	Wash the cloth mask using running water	42 (84%)	8 (16%)	47 (94%)	3 (6%)	50 (100%)
8	A mask should be worn correctly to cover your mouth, nose, and chin	50 (100%)	0 (0%)	49 (98%)	1 (2%)	50 (100%)
9	When removing the mask, only touch the back/strap of the mask	49 (98%)	1 (2%)	48 (96%)	2 (4%)	50 (100%)
10	The mask should be changed if it is dirty or wet	50 (100%)	0 (0%)	49 (98%)	1 (2%)	50 (100%)
11	If you have used a mask, there is no need to maintain a distance of 1-2 meters (physical distancing)	47 (94%)	3 (6%)	48 (96%)	2 (4%)	50 (100%)
12	Before and after wearing a mask, you do not need to wash your hands	48 (96%)	2 (4%)	48 (96%)	2 (4%)	50 (100%)
13	After wearing a disposable mask, throw it in a closed trash can	4 (8%)	46 (92%)	27 (54%)	23 (46%)	50 (100%)
14	If there is liquid on a medical mask, then the liquid in the mask is washed first before throwing the mask away	45 (90%)	5 (10%)	47 (94%)	3 (6%)	50 (100%)

8) If there is liquid on a medical mask, then the liquid in the mask is washed first before throwing the mask away.

Knowledge is influenced by education factors, information sources, socio-culture, economy, environment, experience, and age [11]. In his research, Fred concluded that the

lack of knowledge and access to information causes a person to have limited knowledge about the dangers of unhealthy behavior to lack motivation to adopt healthy behaviors [14]. The development of information technology will help outreach activities for the wider community. Ernawati et al. stated that digital applications have also been able to innovate work in the medical and health fields to improve public services regarding health [15]. Digital applications are also widely used by several countries in education for dengue hemorrhagic fever [16], and education about Clean and Healthy Life Behavior (PHBS) [17]

Three questions experienced a decrease incorrect answers after counseling (Table 2). The possibility of this decline is due to adolescents' unstable emotions, so they tend to do something according to the teenager's will. The results of this study are in line with the research of Nisfiannoor et al., which states that the regulation of emotions in adolescents depends on the situation that becomes their emotional stimulation, thus making them do something else or do nothing [18]. Before the mean difference test was carried out to analyze the effect of extension on the level of knowledge, the data normality test was carried out. Respondents in this study were as many as 50 people, so the Normality Test was carried out by Kolmogorov Smirnov ( $N \geq 50$ ) (Table 3).

TABLE 3: Results of Normality Test for Variable Data, Total Pre-test, and Post-test Values with Kolmogorov Smirnov ( $N \geq 50$ ).

	Kolmogorov-Smirnov <sup>a</sup>		
	Statistic	df	Sig.
<i>pre-test</i>	.232	50	.000
<i>posttest</i>	.181	50	.000

The results of the data normality test (Table 3) show that  $p = 0.000$ , which means that the data is not normally distributed ( $p < 0.05$ ). So that the statistical test to prove an increase in the score of knowledge about the use of masks and how to dispose of them before and after counseling was used the Wilcoxon test (Table 4).

TABLE 4: Test Results.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	<i>pre-test</i>	80.90	50	7.332	1.037
	<i>posttest</i>	91.50	50	8.527	1.206

The Wilcoxon test results (Table 4) showed an increase in the average score before and after counseling, from 80.9 to 88.8. The  $p$ -value = 0.000 shows an effect of counseling on increasing the level of high school students' knowledge about the use of

TABLE 5

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	pre-test & posttest	50	.255	.073

TABLE 6: Paired Samples Test.

	Paired Differences					t	df	Sig. (2 tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Interval Differences	Confidence of the			
				Lower	Upper			
Pair 1 pre- test posttest	-10.600	9.723	1.375	-13.363	-7.837	-7.709	49	.000

masks and how to dispose of them. The success of counseling on increasing knowledge is in line with the results of research on counseling masks for Tuberculosis patients and their families [19], counseling dengue fever to larva monitoring cadres and larva monitoring students [16, 20-21], and counseling healthy homes to families with stunting toddlers [22-23].

Based on the study results (Table 2), the question about the correct use of cloth masks could only be answered correctly by 26% of the respondents. The fabric mask that is suggested contains three layers of cloth. The first layer is a hydrophilic fabric such as cotton, followed by a textile capable of optimum filtration; the second layer can use polyester or cotton. Moreover, the mask's third layer or the outermost part uses a hydrophobic layer or is waterproof as if it is made of polypropylene. Cloth masks should be worn for four hours before changing with a fresh, clean mask. In addition, if it is wet, it must be replaced immediately [24]. However, cloth masks cannot protect the entry of particles because cloth mask protection is only 3 percent [25].

Viruses can stick to and penetrate between the pores of the fabric. The new type of coronavirus has a small size of 0.125 micrometers or 125 nanometers, and the cloth does not have sufficient density to filter out tiny particles. Cloth masks can be a last resort if the availability of surgical masks is tough to obtain. As a result, additional variables must be observed to prevent transmission, including physical separation, avoiding crowds, and carefully washing hands with soap and water [25]. Contamination by viruses can occur if non-medical masks are not replaced immediately (when the masks are wet or dirty) to create favorable conditions for the growth of microorganisms [6]. In this study, some of the respondent data before counseling with fewer results compared to other questions, among others, were about the procedure for removing masks (8%), this is probably

due to a lack of adequate education and simply throwing them directly into the trash is essential. Wang et al.'s research state that proper disposal of mask waste must be actively promoted, and the public must learn to dispose of mask waste properly [26]. All health waste when caring for patients with COVID-19 must be collected safely in suitable special containers and plastics and disposed of safely and on-site recommended. All health waste officers must wear adequate PPE (boots, apron, long-sleeved robe, thick gloves, masks, and goggles or face shield) and practice proper hand hygiene after waste disposal [27].

## 4. Conclusion and Suggestions

This study concludes that counseling affects the proper use of masks and how to properly dispose of masks after counseling because post-test results increase after counseling. Suggestions in this study are for further research to increase the number of respondents with a broader population so that the conclusions of the research results represent the condition of society in general. In addition, the public is expected to continue carrying out government programs to prevent the spread of COVID-19.

## 5. Research Limitations

This study has limitations such as not being applied randomly to respondents because it is limited only by filling in the google form, the number of samples is minimal, it cannot be done directly due to the pandemic period.

## 6. Research Ethics

This research has gone through the ethical review procedure by the YARSI University Research Ethics Committee and passed the ethical review with Letter Number: 085/KEP-UY/BIA/VII/2020.

## Acknowledgments

We would like to express our gratitude to Universitas YARSI for giving complete funding to enable the study to be conducted. Thanks also to the respondents who have been willing to be respondents in this study.

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