

## Correlation between Knowledge, Attitudes and COVID-19 Prevention Behaviors among High School Students in Surabaya Raya, East Java, Indonesia

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### Abstract

The SARS-CoV-2 virus that causes COVID-19 continues to mutate, some forming new, relatively more dangerous variants. Surabaya Raya included Surabaya, Sidoarjo and Gresik is the most affected areas by COVID-19 pandemic especially in East Java Province. One of the reasons for the increase in COVID-19 cases is due to inappropriate COVID-19 prevention behavior. Knowledge and attitudes are important factors that can influence a person's behavior. This study aims to analyze the relationship between knowledge and attitudes with COVID-19 prevention behavior in high school students. This type of research used analytic observational with a cross-sectional design. The subjects in this study were totally 176 students from SMA 4 Muhammadiyah Surabaya, SMA Negeri 1 Sidoarjo, and MA Mamba'ul Hisan Gresik who had filled in questionnaire. The dependent variable in this study is COVID-19 prevention behavior. The independent variables in this study included gender, history of being infected with COVID-19, knowledge, and attitudes. Data were analyzed using chi-square test. The variables studied that have a relationship with COVID-19 prevention behavior in high school students are knowledge ( $p=0.027$ ;  $PR=0.48$ ) and attitudes ( $p=0.000$ ;  $PR=6.83$ ). The variables studied that did not have a relationship were gender ( $p=0.537$ ) and a history of being infected with COVID-19 ( $p=0.974$ ). Knowledge and attitudes are significantly related to COVID-19 prevention behavior, but not for gender and history of COVID-19 disease. Community service is one of the important efforts in improving the knowledge, attitudes, and behavior of high school students.

**Keywords:** COVID-19, Knowledge, Attitude, Behavior.

### INTRODUCTION

COVID-19 is still a global problem. This disease can interfere with the human respiratory system which can result in severity and even death for the sufferer. This disease continues to increase every day and causes death in various countries, so that COVID-19 is categorized as a global pandemic. The SARS-CoV-2 virus that causes COVID-19 continues to mutate and some form new variants that are relatively more dangerous, one of which is the delta variant (B.1.617.2) (Latifah, Dimaskara, Alfiah, & Fajrini, 2021). The delta variant was first identified in India in October 2020 and has spread to various countries in the world, one of which is Indonesia. This variant is more infectious than the previous variant so that individuals infected with the delta variant are twice as likely to need treatment than those infected with other variants (Santoso, 2022).

Until now, COVID-19 is still infecting the community, the total cases of COVID-19 in Indonesia were 6,315,557 on 21 August 2022 and as many as 157,377 (2.5%) people died (Covid-19 Task Force, 2022). Surabaya raya is one of the regions affected by COVID-19, on 23 August 2022 as many as 126,432 people in Surabaya City were infected with COVID-19 and as many as 2,962 people died, while in Sidoarjo area, cases of COVID-19 reached 46,634 people and 1,019 people died. Then, Gresik area also showed high case numbers of 21,493 people who were confirmed positive for COVID-19 and as many as 748 people died (East Java Covid-19 Task Force, 2022).

The high number of COVID-19 cases in Indonesia has forced the government to make various efforts to deal with the COVID-19 pandemic, one of which is the COVID-19 vaccination program. Administering this vaccine aims to form herd immunity, besides that by administering the vaccine it can also reduce the risk of severity and even death for individuals infected with COVID-19 (Embi et al., 2021). However, amid the incessant vaccination program, there are some people who are still worried about the safety and effectiveness of the vaccine, as much as 7.6% refuse to get the vaccine and 27% are hesitant to get the vaccine (Nugroho & Hidayat, 2021).

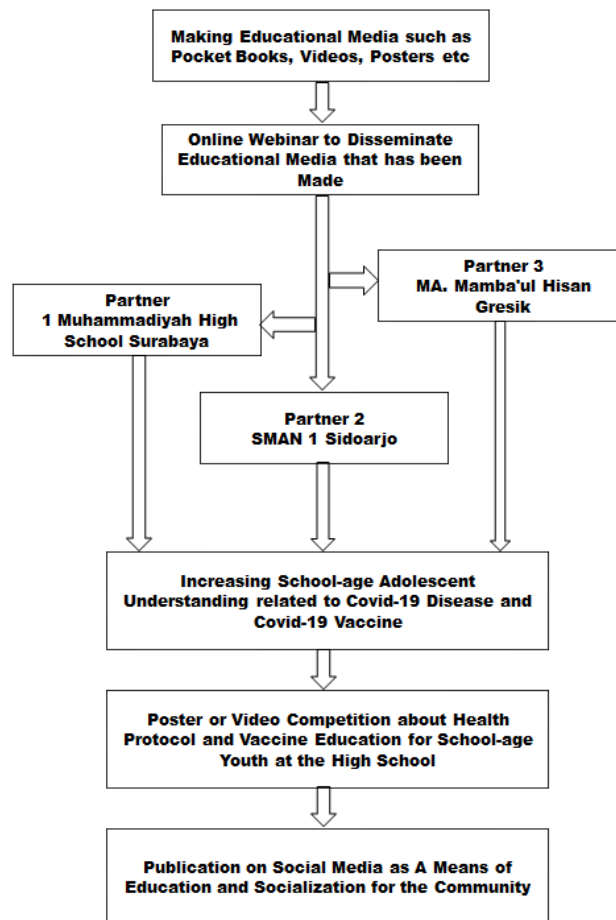
People's lack of knowledge and understanding regarding COVID-19, especially regarding how to prevent COVID-19, as well as the benefits of COVID-19 vaccination is one of the possibilities for an increase in COVID-19 cases and public distrust of the COVID-19 vaccine. Research conducted on students showed that 65.3% of students had insufficient knowledge about COVID-19 (Tan & Budiyaniti, 2022). Research in Gorontalo also showed that 23% of respondents had insufficient knowledge about the COVID-19 vaccination. Lack of knowledge is caused by a lack of information obtained or because of the many "hoax" news circulating in society (Monayo, 2022). Knowledge is an important aspect in determining behavior. If the individual has good knowledge, it will also have a positive impact on his behavior and attitude. Individuals who have low knowledge have a 2.16 times higher risk of not implementing health protocols in preventing COVID-19 (Widayanti, 2021). Knowledge and attitude are important factors that can influence a person's behavior.

One of the reasons for the increase in COVID-19 cases is due to inappropriate COVID-19 prevention behaviors including using masks, cleaning hands using soap or hand sanitizer, and keeping a minimum distance of one to two meters. As many as 55.8% of Micro Small and Medium Enterprises (MSME) traders in Kutoharjo Square, Kaliwungu, Central Java, did not adhere to wearing masks and had insufficient knowledge about COVID-19 (Mushidah, 2021).

Adolescents are an important aspect in carrying out preventive behavior appropriately and in accordance with health protocols so that the spread of COVID-19 can be overcome. The level of individual knowledge and attitudes is important in implementing preventive behavior. Overall health promotion efforts are needed for the community so that it can change people's cognitive, affective and psychomotor abilities in carrying out COVID-19 prevention (Saqlain et al., 2020). The purpose of this study was to determine the relationship between knowledge and attitudes with COVID-19 prevention behavior, especially in high school students.

#### **METHOD**

This type of research is analytic observational with a cross-sectional design. The subjects in this study were totally 176 students from grades 10-12 in high school located in Surabaya Raya at SMA 4 Muhammadiyah Surabaya, SMA Negeri 1 Sidoarjo, and MA Mamba'ul Hisan Gresik who had filled in the questionnaire. This research has passed an ethical test at the Ethics Commission of the Faculty of Public Health, Airlangga University.



**Figure 1.** Flowchart of activities in community development and empowerment

The dependent variable in this study is the behavior of preventing COVID-19. The independent variables in this study included gender, history of being infected with COVID-19, knowledge about COVID-19, and attitudes. Knowledge about COVID-19 disease, behavior, and attitudes are measured from several questions which are then summed to get a score for each variable. Data analysis in this study was carried out using univariate and bivariate methods. Univariate analysis to describe variables in the form of frequency tables. Meanwhile, bivariate analysis was carried out by means of the chi-square test to see the relationship between variables.

This community service is carried out online in the form of a webinar with the topic "Young Generation Literacy COVID-19" through a zoom meeting in September 2021. The educational media used are in the form of power points, videos (HKI EC00202143421), as well as a pocket book (HKI 000267944) about COVID-19 and Vaccination. This series of community service activities begins with completing the pre-test, then providing material through power points, videos, and pocket books, as well as questions and answers, and finally filling out the post-test. Significant differences were found in students' knowledge about COVID-19 and its vaccination before and after the intervention via webinar, and higher score in post test results (Yamani et al., 2022). Analysis was carried out in this study about the correlation between knowledge and attitudes with COVID-19 prevention behaviour in high school students in Surabaya Raya.

## RESULTS

The results of the descriptive analysis illustrate that the majority of respondents who took part in the study were female (53.98%). The average age of the respondents is  $16.40 \pm 1.09$  years old. The majority of respondents came from the MA Mamba'ul Hisan Gresik and the majority were in grade 12. Most of the respondents had no history of being infected with

COVID-19 (88.07%) and had received the first dose of the COVID-19 vaccine (75.00%). Respondents (34.09%) had poor knowledge regarding COVID-19 and as many as (39.77%) had unfavorable attitudes regarding prevention of COVID-19. As many as 39.77% of respondents still have poor behavior in preventing COVID-19 (Table 1).

Table 2 shows that 48.68% of male respondents had bad behavior, while 51.32% of female respondents had bad behavior. The results of the chi-square analysis were obtained a p value of 0.537 ( $p > 0.05$ ), which means that there is no significant relationship between gender and COVID-19 prevention behavior. Table 2 also shows 11.84% of respondents who had a history of being infected with COVID-19 and had bad behavior. The results of the chi-square analysis was obtained a p value of 0.974 ( $p > 0.05$ ), which means that there was no significant relationship between a history of being infected with COVID-19 and the behavior of preventing COVID-19.

**Table 1.** Characteristics of Respondents

Variable	Frequency (n)	Percentage (%)	Mean	SD
<b>Gender</b>				
Male	81	46,02		
Female	95	53,98		
<b>Age</b>			16,40	1,09
<b>School</b>				
SMA Muhammadiyah 4 Surabaya	55	31,25		
SMA Negeri 1 Sidoarjo	28	15,91		
MA Mamba'ul Hisan Gresik	93	52,84		
<b>Class</b>			-	-
10	66	37,50		
11	32	18,18		
12	78	44,32		
<b>History of COVID-19</b>			-	-
Yes	21	11,93		
No	155	88,07		
<b>Status of Vaccination</b>			-	-
Not yet	12	6,82		
Dose 1	132	75,00		
Dose 2	32	18,18		
<b>Knowledge</b>			-	-
Not good	60	34,09		
Good	116	65,91		
<b>Attitudes</b>			-	-
Not Good	70	39,77		
Good	106	60,23		
<b>Behavior</b>			-	-
Not Good	70	39,77		
Good	106	60,23		
<b>Total</b>	<b>176</b>	<b>100,00</b>	-	-

**Table 2.** Cross tabulation between the independent and dependent variables

Variable	Behavior				Total N	%	p-value *	PR (95% CI)
	Not Good n	%	Good n	%				
<b>Gender</b>								
Male	37	48,68	44	44,00	81	46,02	0,537	1,21 (0,67<PR<2,20)
Female	39	51,32	56	56,00	95	53,98		
<b>History of COVID-19</b>								
Yes	9	11,84	12	12,00	21	11,93	0,974	0,99 (0,39<PR<2,47)
No	67	88,16	88	88,00	155	88,07		
<b>Knowledge</b>								
Not Good	19	25,00	41	41,00	60	34,09	0,027	0.48 (0,25<PR<0.92)
Good	57	75,00	59	59,00	116	65,91		
<b>Attitudes</b>								
Not Good	49	64,47	21	21,00	70	39,77	0,000	6.83 (3,49<PR<13,38)
Good	27	35,53	79	79,00	106	60,23		
<b>Total</b>	<b>76</b>	<b>100,00</b>	<b>100</b>	<b>100,00</b>	<b>176</b>	<b>100,00</b>		

\*A p-value below 0.05 indicates a significant difference.

Respondents who had poor knowledge and had poor COVID-19 prevention behavior were 25.00%. The results of the chi-square analysis were obtained a p value of 0.027 ( $p < 0.05$ ), which means that there is a significant relationship between knowledge and behavior to prevent COVID-19. The Prevalence Ratio (PR) value is 0.48 (0.25-0.92), which means that respondents with poor knowledge are 0.48 times more likely to have bad behavior in preventing COVID-19 than respondents who have good knowledge (Table 2). Respondents who had unfavorable attitudes regarding COVID-19 prevention and had unfavorable COVID-19 prevention behaviors were 64.47%. The results of the chi-square analysis were obtained a p value of 0.000 ( $p < 0.05$ ), which means that there is a significant relationship between attitudes and behavior to prevent COVID-19. The Prevalence Ratio (PR) value is 6.83 (3.49-13.38), which means that respondents with unfavorable attitudes regarding prevention of COVID-19 are 6.83 times more at risk of having unfavorable behavior in preventing COVID-19 than respondents who have a good attitude (Table 2).

### DISCUSSION

The results of the study showed that there was no significant relationship between gender and COVID-19 prevention behavior. This research is in line with research (Abdu, Saranga', Dangeubun, & Sari, 2021) which states that there is no significant relationship between gender and COVID-19 prevention behavior. Male and female genders have the same risk of having bad behavior in preventing COVID-19. However, men and women have the ability to easily access information through social media, so they have the same role in efforts to improve their health in everyday life through clean and healthy living behaviors in efforts to prevent COVID-19 (A. Sari & Budiono, 2021).

This study also shows that there is no significant relationship between history of COVID-19 disease and COVID-19 prevention behavior. The results of this study are different from research conducted on the people of Indrasari Village. There is a significant relationship

between a history of being infected with COVID-19 and the behavior of preventing COVID-19 ( $p$ -value = 0.000), as many as 40% of people who have been infected with COVID-19 have negative behavior in preventing COVID-19 (Primanadini, Torizellia, & Setia, 2021). This condition can be caused by several factors including the level of awareness, level of compliance, habits and environment. Apart from that, it can be affected by the lack of facilities and infrastructure that can support personal hygiene behavior (Nur & Nurmala, 2020).

This study shows that knowledge related to COVID-19 has a significant relationship with COVID-19 prevention behavior. The results of this study are supported by research conducted on students at UIN Sunan Ampel Surabaya which shows that individuals who have poor knowledge are 0.46 times at risk of not implementing health protocols in efforts to prevent COVID-19 (Widayanti, 2021). Information owned by each individual can determine the decision making. Individuals who have good information about COVID-19 are able to determine how to behave in preventing COVID-19 (Purnamasari & Raharyani, 2020). Good knowledge also helps in decision making to behave. Behavior that is based on good knowledge will last longer than behavior that is not based on knowledge (Irwan, 2017). Research conducted in China also shows that there is a significant relationship between knowledge about COVID-19 and behavior to prevent COVID-19. Individuals who have poor knowledge are 0.78 times more likely to risk not using a mask when outside the home and 0.90 times more likely to go to crowded places (Zhong et al., 2020). Various media are used as educational media to increase public knowledge. Good knowledge can later form good community behavior as well.

Attitude has a significant relationship with COVID-19 prevention behavior. This research is in line with research conducted on students of UIN Syarif Hidayatullah Jakarta. Students who have a negative attitude in preventing COVID-19 are 2.10 times more likely to have bad behavior in preventing COVID-19 than students who have a positive attitude (Linawati et al., 2021). Individuals in carrying out COVID-19 prevention behaviors need a positive attitude. A positive attitude will bring a sense of responsibility when taking action and will also produce positive behavior (Dewi, Widowati, & Indrayani, 2020). The effect of attitudes on behavior is strengthened by the presence of intention. A positive attitude influences an individual's strong intention to carry out COVID-19 prevention behavior, one of which is practicing social distancing (Yanti et al., 2020). Attitude is one of the predisposing factors in a person to behave. Attitudes are influenced by personal experience and the influence of other people who are considered important, such as community leaders, family, and idols (AR Sari et al., 2020). Moreover, schools need to provide effective health promotion programs for educated young adults (Masuri and Zulfikri, 2022). An increased attitude towards awareness of using masks for students of the Biaturrahman Islamic Boarding School after watching a video by the Busur Creative Community (Rahmat et al., 2023). Our activities produce educative videos and pocket books as educational media for COVID-19 to increase knowledge, attitude, and prevention behaviours of students.

### **CONCLUSION**

Knowledge and attitudes have a significant relationship with COVID-19 prevention behavior in high school students. Gender and history of COVID-19 disease did not have a significant relationship with COVID-19 prevention behavior in high school students. The majority of respondents already have good behavior in preventing COVID-19, but there are still respondents who have bad behavior in preventing COVID-19. Community service is an important effort in increasing the knowledge, attitudes and behavior of high school students.

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