Level of Knowledge and Attitude towards COVID-19 among High School Students in Depok

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Abstract

Background: Depok is the city with the largest COVID-19 cases in West Java, Indonesia. The application of health protocol for high school student as the second-largest age group depends on the level of knowledge and attitudes that can be affected by gender. This study aimed to determine the level of knowledge and attitudes based on the gender of high school students towards COVID-19 in Depok.

Methods: This study was a cross-sectional analytic study, conducted from June 2020 to June 2021. The data was collected using a Google form application with a validated questionnaire and the research subjects were high school students in Depok. Knowledge of COVID-19 was assessed with 18 questions, true or false questions. Correct answer was assigned 1 point. Points were summed for a total knowledge score of Poor, Moderate, or Good. Attitude was assessed with 6 questions. For each answer given, subjects with a total score of >18 were assessed as a positive attitude.

Results: Of a total of 273 respondents, 238 had met the inclusion criteria. Most of the respondents had a moderate level of knowledge (60.5%) and most of the respondents (89%) had a positive attitude towards COVID-19. No significant differences in level of knowledge or attitude between males and females ($p>0.05$).

Conclusions: High school students in Depok have a moderate level of knowledge and have a positive attitude in dealing with COVID-19 which is not influenced by gender. The lack of information regarding the timing of vaccine administration and examination of COVID-19 needs to be a concern for high school students in Depok.

Keywords: Attitude, COVID-19, Depok, high school students, knowledge

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.[1] It can spread through human-to-human transmission and indirect contact with contaminated objects.[2] Indonesia has implemented a large-scale social distancing, increasing the capacity of COVID-19 diagnostic tests, and launching a national research consortium to accelerate innovations to combat the disease.[3] Washing hands regularly, wearing a mask, physical distancing, and other health protocols are the best strategy to prevent transmission of the virus.[4,5] The COVID-19 has infected 118,058,503 people in the world (March 12, 2021), 1% infected Indonesian that happened in 2% of people in West Java, and 15% were living in Depok.[6]

The World Health Organization (WHO) on March 11, 2020, declared the novel coronavirus (COVID-19) a global pandemic, all countries imposed restrictions on community activities and some countries were locked down.[7] This condition causes some people to feel anxiety in their daily life. When anxiety affects large numbers of people, panic buying can occur and make some consequences such as restrictions in daily activities, avoidance behaviours leading to limited sociability, and self-medication.[8] With limited activities, electronic media has become the public's main in getting the latest information about COVID-19. The obtained information can affect the knowledge, understanding, behavior, and even habits of the community's perception of COVID-19.[9–11]

Knowledge and attitude are important factors in determining health decisions and health outcomes.[8] Knowledge and attitude

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https://doi.org/10.15850/amj.v9n2.2513

information are necessary because unclear information and negative attitudes toward COVID-19 can generate stress and panic among the population.[12] Therefore, efforts are needed to evaluate people's knowledge and behavior related to COVID-19 to assess the public's awareness of COVID-19 and behavior related to preventing transmission and taking action when infected by the disease.

Depok as one of the big cities in the province of West Java, Indonesia, is located between Jakarta and Bogor, and has 11 sub-districts. COVID-19 was first detected in Depok and became the city with the highest COVID-19 cases in West Java.[13] The high risk of spreading COVID-19 and positive cases in Depok city can be caused by many factors, such as geographical location, human mobility, knowledge, and attitudes of Depok City residents.[14]

About 9.43% of Indonesia's population is in the age range of 15–19 years.[15] The population at this age is categorized as teenagers, at the level of high school students. High school students are the most active in traveling during the pandemic, therefore, they are at risk of getting COVID-19. Due to the lack of information regarding the level of knowledge and attitudes of high school students related to COVID-19 in Depok, this study was conducted to determine the level of knowledge and attitudes of high school students about COVID-19 in Depok.

Recent studies have shown that gender and age can affect a person's behavior and knowledge. Gender is associated with a person's roles and obligations given by society, as well as his status in the family and society. These aspects influenced the risks that they take and face, as well as their efforts to improve their health.[16] This study aimed to determine the level of knowledge and attitude based on the gender of high school students towards COVID-19 in Depok.

Methods

This study was an analytic research with a cross-sectional study design and was carried out from April to June 2021 in high schools in Depok. The tool or material used was a valid questionnaire (18 questions for knowledge and 6 questionnaires for attitude) in the form of a Google form. The knowledge questionnaire was tested using the Pearson correlation test, and the reliability test used the Cronbach's alpha (α) test with a 95% confidence level showing the results of α=0.671 (reliable), and α=0.786 (reliable) for the attitude questionnaire.

The inclusion criteria in this study were high school students in Depok who could access the questionnaire link. Subjects' answers were included if the subjects agreed to fill out the form and excluded if the response have exceeded the deadline; multiple responses from the same person; did not complete the questionnaire or fill out the questionnaire. Sampling was carried out using a total sampling technique from probability sampling based on a sub-district in Depok. Determination of the number of samples based on the Slovin formula with the results of 110 research respondents.[17] This study had been approved by the Research Ethics Committee, Universitas Padjadjaran no. 323/UN6.KEP/EC/2021.

The questionnaire evaluated the level of knowledge in the form of questions with true/false answers. The correct answer was given a score of 1 and the wrong answer was given a score of 0. The level of knowledge was considered "Good" if the correct answer was >75%, "moderate" if the correct answer =56–75%, and "poor" if the correct answer was <56%. The questionnaire assessing attitudes towards COVID-19 used a Likert scale, which

Table 1Characteristics of Respondents

Characteristic	Frequency (Total = 238)	Percentage
Age (years)*	18 (14-21)	
Gender		
Male	90	37.8
Female	148	62.2
Grade level		
10	110	46.2
11	101	42.4
12	27	11.3

Note: *=data presented in median (min, max)

specified the responders' level of agreement on four points, namely 4 for strongly agree, 3 for agree, 2 for disagree, and 1 for strongly disagree. Subjects with a score greater than or equal to 75% of the maximum score were classified as "positive", and subjects with a score less than 75% of the maximum score were classified as "negative".[10]

The data were analysed using the SPSS software computer program and were analyzed by descriptive statistics and Chi-square correlation analysis. Data were presented in tables and diagrams.

Table 2 Distribution of the Answers of Knowledge Level on COVID-19 in the High School Students in Depok

No	Knowledge	Male (n=90)	Female (n=148)	Total (n=238)
		Correct n (%)	Correct n (%)	Correct n (%)
1	Corona virus can survive in the air for three hours in aerosol form	72 (80)	131 (88.5)	203 (85.3)
2	Corona virus has similarities with the SARS virus	72 (80)	131 (88.5)	203 (85.3)
3	Patients without comorbid diseases such as obesity and hypertension are more susceptible to corona virus infection	53 (58.8)	76 (51.3)	129 (54.2)
4	Children are more susceptible to corona virus infection than the elderly	72 (80)	122 (82.4)	194 (81.5)
5	Corona virus cannot enter through the eyes	51 (56.6)	95 (64.1)	146 (61.3)
6	If a person's hands touch items that have been contaminated and then touch the nose area, the virus can enter and cause symptoms	87 (96.6)	147 (99.3)	234 (98.3)
7	Loss of smell is one of the specific complaints of being infected with the corona virus	84 (93.3)	147 (99.3)	232 (97.5)
8	Sore throat, cough, runny nose, and fever can be one of the early symptoms of corona virus infection	84 (93.3)	148 (100)	232 (97.5)
9	Being in a crowd increases the risk of being infected by the corona virus	89 (98.8)	148 (100)	237 (99.6)
10	Masks made of cotton cloth have higher effectiveness in filtering virus particles than surgical masks	48(53.3)	100 (67.5)	148 (62.2)
11	Antibiotics are effective in preventing and treating corona virus infections	32 (35.5)	57 (38.5)	89 (37.4)
12	It is not safe to receive letters or packages from abroad	46 (51.1)	60 (40.5)	106 (44.5)
13	Spraying alcohol all over the body can treat the corona virus	69 (76.6)	97 (65.5)	166 (69.7)
14	PCR test results can be known no later than 1 day	30 (33.3)	45 (30.4)	75 (31.5)
15	The accuracy rate of rapid antigen test is almost 100%	27 (30)	46 (31)	73 (30.7)
16	The antibody rapid test procedure begins with taking a blood sample from the fingertip which is then dropped onto the rapid test kit	76 (84.4)	141 (95.2)	171 (71.8)
17	The corona virus vaccine works by stimulating the formation of specific immunity against the corona virus. So that when exposed, a person will be able to avoid 100% transmission or serious illness due to the disease	30 (33.3)	47 (31.7)	77 (32.4)
18	The corona virus vaccine is carried out 2 times and according to the schedule, which is at least 1 week from the first vaccine	15 (16.6)	35 (23.6)	50 (21)

Results

Of the hundreds of schools in 11 sub-districts in Depok, only 10 schools from 8 sub-districts were collected. It was because most schools were busy preparing for the admission of new students (*Penerimaan Peserta Didik Baru,* PPDB), so the responses received tended to be slow and needed to be followed up. Furthermore, some schools did not allow research to be carried out because the school was a boarding school, and students were prohibited from using gadgets. There were also some schools that refused because they had not been accredited. From a total of 238 respondents, the majority of respondents in this study were 18 years old, female, and in the 10th grade (Table 1).

Table 3 Level of Knowledge and Attitude toward COVID-19 among the High School Students

No	Attitude	Male				Female				Total			
		SA n(%)	A n(%)	D n(%)	SD n(%)	SA n(%)	A n(%)	D n(%)	SD n(%)	SA n(%)	A n(%)	D n(%)	SD n(%)
1	I always wash my hands regularly to avoid and prevent the transmission of the corona virus	65 (72.2)	25 (27.8)	0	0	112 (75.7)	36 (24.3)	0	0	177 (74.4)	61 (25.6)	0	0
2	I limit my activities by staying at home to avoid transmission of the corona virus	47 (52.2)	38 (42.2)	3 (3.3)	2 (2.2)	72 (48.6)	64 (43.2)	11 (7.4)	1 (0.7)	119 (50)	102 (42.9)	14 (5.9)	3 (1.3)
3	Taking medicines such as herbs, supplements, and vitamins to prevent corona virus infection is not a problem for me	39 (43.3)	42 (46.7)	0	9 (10)	49 (33.1)	92 (62.2)	7 (4.7)	0	88 (37)	134 (56.3)	16 (6.7)	0
4	I feel calm during the lockdown	20 (22.2)	33 (36.7)	22 (24.4)	15 (16.7)	25 (16.9)	89 (60.1)	28 (18.9)	6 (4.1)	45 (18.9)	122 (51.3)	50 (21)	21 (8.8)
5	I always wear a mask every time I leave the house	55 (61.1)	32 (35.6)	2 (2.2)	1 (1.1)	119 (80.4)	29 (19.6)	0	0	174 (73.1)	61 (25.6)	2 (0.8)	1 (0.4)
6	I don't mind doing self-isolation for a few days after traveling out of town/ country	0	45 (50)	36 (40)	2 (2.2)	0	80 (54.1)	61 (41.2)	0	97 (40.8)	125 (52.5)	13 (5.5)	2 (0.8)

Note: SA= Strongly agree, A= Agree, D= Disagree, SD= Strongly disagree

Table 4 Proportion Categorized of Knowledge and Attitude towards COVID-19

Items	Frequency (Total=238)	Percentage (%)
Knowledge		
Good	51	21.4
Moderate	144	60.5
Poor	43	18.1
Attitude*		
Positive	212	89.1
Negative	25	10.5

Note: *one subject is not included because missed one answer

Most respondents (85.2%) knew that the corona virus was able to survive longer in the air in aerosol form, knew the symptoms when infected with the corona virus, and knew that the virus was transmitted through contaminated items (Table 2). However, there were still many respondents who did not know that co-morbidities were factors that aggravate the course of the disease (45.8%), the ability of the coronavirus to enter the body through the eyes (38.7%), the ineffectiveness of cloth masks (37.9%), the procedure of rapid test (68.5%) and the antibiotics that could not kill viruses (62.7%) (Table 2).

In the corona virus examination, most of the respondents (69.4%) did not know the accuracy of the rapid antigen test and when the PCR test results could be received (68.5%) (Table 2). There was a misconception among the most respondents (67.7%) that vaccination could prevent 100% of corona virus infections (Table 2).

Based on the results of knowledge research, it was found that 17.8% of male respondents had good knowledge and 23.6% of female respondents had good knowledge. There was no difference in the proportion of moderate and poor level of knowledge between males and females. There was also no significant difference between the knowledge categories in males vs females ($p>0.05$) nor by age (data not presented).

Based on the results of attitude research, it was found that 74.6% of respondents strongly agreed in terms of washing hands, 50% in term of limiting activities outside the home, 73.1% in terms of using masks, 18.9% in terms of feeling calm during the pandemic, and 40.7% in term of self-isolation for a while after traveling out of town/country. Of the 91.9% of female respondents had positive attitudes and 84.4% of male respondents had positive attitudes but there was no significant correlation difference between attitudes and gender ($p>0.05$) or by age (data not presented).

Discussions

The respondents of this study were aged 4–21 years, the majority were female, and most had moderate knowledge towards COVID-19. Similar studies were conducted in Saudi[10] (18–28 years old), India[11] (more than 18 years) and Ethiopia[18] (18–29 years old) which also used the same type of study and questionnaire instrument. The results are good level of

Table 5 Comparison between Males and Females in Terms of Knowledge and Attitude towards COVID-19

Items	Male n (%)	Female n (%)	p-value
Knowledge			0.438
Good	16 (17.8)	35 (23.6)	
Moderate	55 (61.1)	89 (60.1)	
Poor	19 (21.1)	24 (16.2)	
Attitude*			0.131
Positive	76 (84.4)	136 (91.9)	
Negative	13 (14.4)	12 (8.1)	

Note: *one subject is not included because missed one answer

knowledge in Saudi,[10] moderate in India[11] and poor level of knowledge in Ethiopia.[18] Whereas in the Ploso District, Jombang Regency[19], it was found that 67% of high school students had a good level of knowledge towards COVID-19. In contrast to the others, with different knowledge categories, the results of study in the Philippines showed that the level of knowledge of respondents aged 16–29 years was low (scores 75% and below).[20] The difference in these results could be influenced by the age of the subject participating in each study. The present study did not show a correlation between age and knowledge toward COVID-19 but studies in Saudi and the Philippines did.[10,20]

Based on the results of attitudes, it was discovered that most of the respondents have a positive attitude towards COVID-19 as well as the results of study in Saudi,[10] India,[11] Ethiopia,[18] and Philippine.[20] In this study, female are superior to males in terms of knowledge and attitudes although there is no correlation between gender and level of knowledge nor attitude towards COVID-19. The results of this study conform to researches in Bangladesh,[21] which states that the proportion of good knowledge, positive attitudes, and good practices is higher in female respondents. Without exception, female are more likely than male to do recommended preventions,[21] and they have more time to read or discuss with their environment. This causes female to have a tendency to behave better than male.[22] This finding is further validated by a meta-analysis demonstrating that women were 49.5% more likely to practice and adopt health-protective behaviors in the context of a pandemic outbreak.[16]

Thereby, increasing COVID-19 education and health protocol socialization to the community, both gender and young age, is needed to increase knowledge and reduce negative attitudes toward COVID-19.

There are some limitations of our study, we used a different questioning tool from others studies, which could influence the analysis of the results.

To conclude, high school students in Depok have a moderate level of knowledge and positive attitude towards COVID-19. Further improvements need to be implemented in school to increase knowledge, positive attitudes, and simplify information regarding the transmission and spread of COVID-19 to students.

Acknowledgements

The authors would like to thank Kurnia Wahyudi and Sri Yusnita from the Department of Public Health, Faculty of Medicine, Universitas Padjadjaran, Indonesia, for their advice on methodology of research. We also thank all respondents for their cooperation in this study.

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