



# Knowledge and Healthy Behavior of the West Java People Related to COVID-19 Pandemic

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## Abstract

**Background:** Coronavirus Disease 2019 or COVID-19 is a new type of coronavirus that was discovered in Wuhan, Hubei, China in 2019. COVID-19 spread widely to cause a global pandemic that continues to this day.

**Objectives:** This study aimed to analyze the level of knowledge and healthy behavior of West Java People adopted related to COVID-19.

**Method:** This study used a cross-sectional design using an online questionnaire given to the people residing in West Java Province, Indonesia. The total sample of 1,700 people aged 16 years and over. Knowledge and healthy behavior were analyzed using Spearman test and Mann-Witney test.

**Results:** This study showed that the level of public knowledge about COVID-19 was high, in general. Knowledge was significantly related to healthy behavior such as sports habits ( $p < 0.05$ ), consumption of fresh food ( $p < 0.05$ ), and washing hands with soap ( $p < 0.05$ ) and there are significant differences between men and women on knowledge about COVID-19 and healthy behavior such as smoking habits ( $p < 0.001$ ), consumption of fruit and vegetables ( $p < 0.001$ ), consumption of fresh food ( $p < 0.001$ ), and washing hands with soap ( $p < 0.001$ ) but not for sunbathing habits in the morning ( $p > 0.05$ ).

**Conclusion:** Level of public knowledge about COVID-19 was related to healthy behaviour that can prevent the spread of the COVID-19 pandemic

**Keywords:** *Knowledge, Healthy Behavior, COVID-19*

## Introduction

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a new virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2). This virus is a member of the zoonotic pathogenic coronavirus family, which is a virus that causes and transmits disease between humans and several animal species such as cows, camels, cats, and bats (1). COVID-19 was first detected in December 2019 in Wuhan China and spread around the world within a few months. Several countries in the world have reported the number of cases; however, this disease is spreading drastically in the United States, Brazil, India, and Russia. COVID-19 has caused more than 19.7 million confirmed cases and killed an estimated 728,000 worldwide as of August 10, 2020, and that figure is expected to continue to rise in the coming months (2). Currently, in Indonesia, about 125,000 confirmed cases have been recorded with several deaths by 5,723 people.

Responding to the COVID-19 outbreak that occurred in Indonesia, the government implemented a control policy through Large-Scale Social Restrictions intending to prevent transmission. Several public facilities, such as offices and shops, are prohibited from operating, except for shops selling essential commodities, such as supermarkets or pharmacies. People need to apply health protocols such as wearing masks, maintaining a minimum distance of 1 meter, and washing their hands with soap. Besides, the schools, cinemas, recreational areas, or other cultural tourism places must be closed. Any gatherings in public spaces are prohibited, including sports activities and parties. The same has been done by the Italian government, which has taken policies in controlling the COVID-19 outbreak through health campaigns, including closing schools, universities, and workplaces (3).

At the outbreak of Severe Acute Respiratory Syndrome (SARS) that occurred in 2003, public knowledge of infectious diseases was associated with fear. Then, it hinders efforts to prevent the spread of disease, including people delaying seeking treatment and staying in the community without wanting to know about his health condition (4). Besides, research conducted on students in Italy shows that the presence of the COVID-19 outbreak does not affect the diet and smoking habits of students

(3). This is different from research in China, which shows that knowledge related to infectious diseases such as COVID-19 is related to optimistic attitudes and behaviors that encourage the prevention of transmission (5). Thus, this study aims to analyze public knowledge over COVID-19 and healthy lifestyle during the pandemic.

## Methods

This study used a cross-sectional design, which was conducted in June 2020. The data collection used an online questionnaire distributed through social media such as WhatsApp and Facebook since it was not possible to collect data directly. The online questionnaire contained a brief explanation of the background, research objectives, a statement on the confidentiality of the respondent's data, and a statement of willingness to be a respondent. The sample in this study were people who live in the Province of West Java, Indonesia, aged more than 16 years old, understood explanations related to research, and willing to become respondents.

The online questionnaire consisted of three parts, including sociodemography, knowledge, and behavior. The first part was related to sociodemographic information consisting of age, gender, education, and information media related to COVID-19. The second part was related to the knowledge adopted from the questionnaire about COVID-19 composed of 12 questions covering questions about clinical signs, routes of spread, prevention, and control of COVID-19 (5). Respondents' knowledge regarding COVID-19 was categorized as high if the number of correct answers was more than 6 points and low if the number of correct answers was less than 6 points. And the third part was related to behavior during a pandemic consisting of smoking habits, exercise, consumption of fresh food, consumption of fruits and vegetables, washing hands with soap, and sunbathing. The data were processed and analyzed by using Microsoft Excel 2013 and SPSS version 16. The analysis executed descriptively to find out the characteristics of sociodemographic, knowledge, and behavior of respondents as a whole and groups based on gender. The Mann-Witney test was used to analyze differences in the level of knowledge and behavior between men and women regarding COVID-19. At the same time, the Spearman test was used to analyze the

relationship between knowledge levels and behavior adopted by the community during the pandemic.

The ethical clearance for this study has been approved by the Research Ethics Committee of Bengkulu Health Polytechnic Number KEPK/063/06/2020

## Results

The total respondents who filled out the online questionnaire were 1722 people. After 22 respondents were excluded from the study because they did not meet the criteria since their age was under 16 years, the number

of respondents in this study was 1700. This study showed that the most respondents were female 1191 (70%) with an average age of men and women was  $26.51 \pm 11.66$  and  $23.06 \pm 8.99$ , respectively, while the average age of the respondents as a whole was  $24.10 \pm 9.99$ . Most of the respondents were high school graduates, about 1153 (67.8%) people, and the media most accessed by respondents to obtain information related to COVID-19 was through social media as many as 1268 (74.6%) of respondents.

The distribution of respondents' sociodemographic characteristics is displayed in Table 1.

**Table 1. Sociodemographic characteristics of respondents**

Variable	Whole Sample n= 1700	Men n= 509	Women n= 1191
Age (years)			
<25	509 (29.9%)	331 (65.0%)	952 (79.9%)
≥ 25	861 (50.6%)	178 (35.0%)	239 (20.1%)
Mean±SD	24.10±9.99	26.51±11.66	23.06±8.99
Education			
- Primary school	22 (1.3%)	8 (1.6%)	14 (1.2%)
- Junior high school	50 (2.9%)	16 (3.1%)	34 (2.9%)
- Senior High School	1153 (67.8%)	322 (63.3%)	831 (69.8%)
- Diploma	114 (6.7%)	29 (5.7%)	85 (7.1%)
- Bachelor	311 (18.3)	106 (20.8%)	205 (17.2%)
- Magister	43 (2.5%)	23 (4.5%)	20 (1.7%)
- Doctor	7 (0.4%)	5 (1%)	2 (0.2%)
Sources of Information about COVID-19			
- Print media	9 (0.5%)	3 (0.6%)	6 (0.5%)
- Electronic media	386 (22.7%)	149 (29.3%)	237 (19.9%)
- Social media	1268 (74.6%)	346 (68.0%)	922 (77.4%)
- Friends	31 (1.8%)	6 (1.2%)	25 (2.1%)
- Do not know	6 (0.4%)	5 (1%)	1 (0.1%)

The results of this study showed that most of the respondents, about 1621 (4.6%) people had a high level of knowledge about COVID-19. The results of the analysis showed that female respondents had a higher level of knowledge than men under the Mann-Whitney test, and it was a significant difference between the knowledge levels of men and women ( $p = 0.001$ ). Regarding the healthy lifestyle adopted by respondents during COVID-9, overall it showed that about 1520 (89.4%) respondents did not smoke; 1023 (60.2%) respondents rarely did exercise; 933 (54.9%) respondents sometimes consumed vegetables and fruit; 1039 (61.1%) respondents always consumed fresh food; 1390 (81.8%) respondents always washed their hands with soap; 954 (56.1%) respondents sometimes did the sunbathing in the morning

## Discussion

As far as we know, there are currently not many studies aimed to analyze the level of knowledge related to COVID-19 in Indonesian society, particularly in West Java, and focusing on the behavior they adopt during the pandemic. The results of this study indicated that most respondents had a high level of knowledge about COVID-19. This finding was in line with research that had been conducted recently on respondents in India (6).

The government policy that implements large-scale social restrictions is thought to have an impact on the behavior of people who do more activities at home so that they will spend time watching TV and surfing the web to reduce the boredom they experience during the pandemic. During social restrictions, many people are exposed to the media, which is currently providing updates related to COVID-19 so that it can increase public knowledge (7). Mass media has a significant influence on a person's knowledge and attitudes, including regarding COVID-19 (8) (9).

Some respondents have a lack of knowledge about COVID-19. This is thought to be related to the misguided stigma of society regarding the COVID-19 outbreak, so it led them to shut off the accurate information. One of them is about the confusing symptoms of COVID with the common cold so that people will prefer not to find out about their condition because of excessive fear. Confusion can increase social bias and stigma, including related to the COVID-19 pandemic (10). In response to this, it is necessary a collaboration among the government, media, health facilities, and organizations to carry out interventions aimed at reducing the stigma in every COVID-19 response activity as an effort to prevent the spread of the COVID-19 outbreak.

The government's policy during the COVID-19 pandemic by imposing Large-Scale Social Restrictions has resulted in many restrictions on daily life, including social distancing, self-isolation, and reducing activities outside the home. Although these measures are essential to reduce the spread of COVID-19, these restrictions have an impact on people's health behavior and lifestyle at home.

Most of the respondents in this study did not smoke during the pandemic. Smoking is a risk factor for the severity of COVID-19 (11). Smoking can increase the risk of various types of viral infections and complications and increase the risk factor to death, which is higher than that of non-smoking corona patients (12,13). Most of the respondents in this study rarely did sports. Stay home during COVID-19 harms all intensity levels of Physical Activity. Also, the community's daily sitting time increased from 5 to 8 hours per day (14). Meanwhile, physical inactivity and poor mental health are among the most critical risk factors for morbidity (15).

In contrast to food consumption habits, during a pandemic, most respondents in this study more often consumed fruits and vegetables, also fresh foods. These results were in line with research conducted in Spain, found that during COVID-19, people consumed more fruits, vegetables, or nuts and reduced their intake of red meat, alcohol, fried foods, or pastries (16). Changing the diet to be a healthier diet during a pandemic is an effort to improve the health status so they may avoid the COVID-19 outbreak.

One of the government's efforts to prevent the transmission of COVID-19 is to campaign for the practice of washing hands with soap. In this study, most of the respondents always washed their hands with soap. The COVID-19 pandemic has emphasized the importance of optimal hand hygiene practices to reduce cross-contamination and the spread of the SARS-CoV-2 virus, which causes disease (2). Cleaning hands can not only be done using soap and water but also use alcohol-based gels. Both methods are useful for cleaning hands, although each has its advantages and disadvantages (17).

Alcohol-based hand gels can be used for hand decontamination before and after direct patient contact and clinical care, except in some situations when soap and water must be used. These situations include when hands are visibly dirty or are potentially contaminated with bodily fluids (18).

**Table 2. Knowledge and Healthy Behavior related to COVID-19 of the respondents**

Variables	Whole Sample n= 1700	Men n= 509	Women n= 1191	p
Knowledge				
Level of knowledge about COVID-19				0.001
- High	1621 (4.6%)	466 (91.6%)	1155 (97.0%)	
- Low	79 (95.4%)	43 (8.4%)	36 (3.0%)	
Healthy Behaviour				
Smoking				0.001
- Yes	180 (10.6%)	173 (34%)	7 (0.6%)	
- No	1520 (89.4%)	336 (66%)	1184 (99.4%)	
Sports				0.001
- Never	320 (18.8%)	137 (26.9%)	183 (15.4%)	
- Rare	1023 (60.2%)	293 (57.6%)	730 (61.3%)	
- Often	357 (21.0%)	79 (15.5%)	278 (23.3%)	
Consumption of fruits and vegetables				0.001
- Always	654 (38.5%)	167 (32.8%)	487 (40.9%)	
- sometime	933 (54.9%)	291 (57.2%)	642 (53.9%)	
- Rare	109 (6.4%)	49 (9.6%)	60 (5.0%)	
- Never	4 (0.2%)	2 (0.4%)	2 (0.2%)	
Consumption of fresh food				0.001
- Always	1039 (61.1%)	269 (52.8%)	770 (64.7%)	
- sometime	613 (36.1%)	222 (43.6%)	391 (32.8%)	
- Rare	48 (2.8%)	18 (3.5%)	30 (2.5%)	
- Never	0 (0%)	0 (0%)	0 (0%)	
Washing hands with soap				0.001
- Always	1390 (81.8%)	389 (76.4%)	1001 (84.0%)	
- sometime	287 (16.9%)	108 (21.2%)	179 (15.0%)	
- Rare	23 (1.4%)	12 (2.4%)	11 (0.9%)	
- Never	0 (0%)	0 (0%)	0 (0%)	
Sunbathing				0.77
- Always	186 (10.9%)	67 (13.2%)	119 (10.0%)	
- sometime	954 (56.1%)	277 (54.4%)	677 (56.8%)	
- Rare	414 (24.4%)	112 (22.0%)	302 (25.4%)	
- Never	146 (8.6%)	53 (10.4%)	93 (7.8)	

\*Mann-Whitney test, significant at  $\alpha < 5\%$

During a pandemic, some people practice the sunbathing more often than before. It is thought that sunlight can boost the immune system through various mechanisms. The effects of sunlight, especially UV radiation on the immune system, have been widely explained. Sun exposure to the skin can produce Vitamin D in the human body. Vitamin D can be synthesized non-enzymatically in the skin during exposure to ultraviolet B (UVB) radiation in sunlight. Several studies have hypothesized that populations with more regular exposure to natural UV radiation from the sun have less vitamin D deficiency than those with less UV exposure and may consequently lower mortality rates from COVID-19(19, 20).

Level knowledge	r	p
Smoking	0.033	0.174
Sports	0.064	0.009
Consumption of fruit and vegetables	0.025	0.310
Consumption of fresh food	0.077	0.001
Washing hands with soap	0.074	0.002
Sunbathing	0.025	0.298

\*Spearman test, significant at  $\alpha < 5\%$

Good knowledge about the current pandemic condition is related to changes in people's lifestyles. However, there are still many people who are not aware of changing their habitual behavior to be healthier as an effort to prevent the transmission of COVID-19. Due to the limited sample in this study, it is necessary to carry out further research to find more detail the level of public knowledge and behavior during a pandemic so that it can be used as an illustration for policy arrangement to accelerate the prevention of COVID-19 transmission.

## Conclusion

This research shows that public knowledge about COVID-19 is high, so this affects the lifestyle they adopt during the COVID-19 pandemic. The importance of proper knowledge about COVID-19 can increase public awareness to change their lifestyle to be healthier so that they can avoid the COVID-19 outbreak.

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