



# Factors Related to Public Knowledge about COVID-19 in Indonesia: A Quick Online Cross-Sectional Survey

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## Abstract

**Background:** Covid-19 is a disease that is easily transmitted to humans and causes of death in almost all over the world. Public knowledge is key in controlling the spread of the Covid-19 outbreak.

**Objective:** This research aimed to analyze factors related to public Knowledge about COVID-19 in Indonesia.

**Method:** This study design was cross-sectional with a sample of 5273 people aged 16 years and over and residing in Indonesia. Public knowledge questionnaire used e-survey with a google form. Demographic characteristics with knowledge using independent sample t-tests and one-way analysis of variance (ANOVA). Multivariable linear regression uses all demographic variables as independent variables and knowledge scores as the dependent variable to identify factors related to knowledge

**Results:** Public knowledge scores based on demographic characteristics were generally more than 70. There were differences in demographic characteristics of knowledge in general. Factors that influence community knowledge those were gender (p-value = 0,000), education (p-value = 0,000), marital status (p-value = 0.001) and information media (print, electronic, social, and friends/families) (p-value = 0,000)

**Conclusion:** Demographic characteristics affect the knowledge of the people in Indonesia. High knowledge can be an indicator of the community in fighting against the COVID-19 outbreak.

**Keywords:** *Public Knowledge, COVID-19, Indonesia*

## Introduction

In early December 2019, an outbreak of COVID-19 which caused by a novel coronavirus of severe acute respiratory syndrome 2 (SARS-CoV-2). It first detected in Wuhan, China (1,2). COVID-19 easily transmitted to others (3). COVID-19 has its main clinical symptoms include fever, dry cough, fatigue, myalgia, and pneumonia (4–6). If the symptoms are not treated promptly and appropriately, they will cause death. This is an increase in cases of death in many countries around the world (7). The WHO states that the highest cases occur in developed countries such as the USA, Spain, Italy, England, Russia, Germany, and France. However, cases also occur in developing countries such as Indonesia (8). COVID-19 is currently the most terrible epidemic in the world since no vaccine or treatment has been found effective in treating infected patients (9).

Indonesia was a country with the 36th position from all over the world affected by COVID-19 on May 7, 2020. In Indonesia, there were 12,438 positive confirmed cases and 895 deaths. These cases increased significantly on August 10, 2020, in the 23rd position, with a total of 125,396 cases and 5,723 deaths.(10) Responding to the widespread cases of the pandemic, the World Health Organization (WHO) declared a public health emergency of international concern on January 30, 2020, and called for collaborative efforts for all countries to prevent the spread of COVID-19 (8).

Positive cases of COVID-19 in Indonesia have increased, which is still significant up to the current new normal in several regions, and more new clusters are identified, such as in-office areas (10). The resistance to the COVID-19 outbreak in Indonesia can be successfully controlled when the public has adherence to control measures in dealing with the pandemic (11). These control measures are largely influenced by the Knowledge of COVID-19 based on the theory described by experts in previous studies (12,13).

Previous research conducted in several countries in the world, such as China, Jordan, Italy, and the UK, showed that most people have high knowledge (14). This also shows the same results in studies that have been carried out in 34 provinces in Indonesia, indicating that the majority of people have good knowledge.

This study can be drawn from the SARS outbreak that occurred in 2003, which showed that knowledge of infectious diseases was associated with levels of anxiety and panic in the community in dealing with a pandemic so that it could complicate efforts to prevent the spread of disease (15–17).

In anticipating and suppressing the risk of COVID-19 transmission, the public needs to understand the transmission process and its impact when infected and for people who are vulnerable to complications caused by COVID-19 (18). Therefore, this study aims to investigate the level of knowledge and factors related to public knowledge in dealing with the COVID-19 pandemic in Indonesia during a period of increasing outbreaks.

## Methods

The design of this study was a cross-sectional study. The study was conducted in June 2020. It involved 7,072 respondents over the age of 16 years old who resided in all provinces in Indonesia. The questionnaire was distributed with the google form application via social media such as WhatsApp, Facebook, and Instagram. The knowledge questionnaire in this study was adopted from the research of Zhong et al. (2020) (19). The questionnaire consisted of 4 parts, namely 4 questions about clinical symptoms of COVID-19 (1-4), 3 questions about transmission routes of COVID-19 (5-7), 5 questions about prevention, and control of COVID-19 (8-12). The questionnaire of knowledge level was answered as correct and incorrect plus additional answers as did not know.

Correct answers would be given a value of 1, while incorrect and uninformed answers will be given a value of 0. Data analysis was carried out descriptively and looked at the presentation/proportion of respondents who answered the questionnaire. Demographic characteristics with knowledge used the independent sample T-test, one-way analysis of variance (ANOVA) test, or the appropriate Chi-square test. A multivariable linear regression used all demographic variables as the independent variable and knowledge scores as the dependent variable to identify factors associated with the knowledge. The ethical clearance for this study has been approved by the Research Ethics Committee Bengkulu Health Polytechnic of Number KEPK/063/06/2020.

## Result

The questions over the knowledge level of COVID-19 consisted of 3 major groups, namely 4 questions of clinical symptom, 3 questions of transmission route, and 5 questions of prevention and control. In general, Indonesian people had high knowledge; from 12 questions, only 4 questions had low scores, namely questions on number 2 (50.2%), 5 (27.8%), 6 (7.5%), and 9 (4.4%). Knowledge of clinical symptoms had the correct answer, about 50.2% - 88.3%. Knowledge of transmission route had correct answers about 7.5% - 86.6%. Then, knowledge of prevention and control gained the correct answer about 4.4% - 98.7% (Table.1).

**Table 1. The knowledge level of Indonesian people about COVID-19**

Questions (n=5823)			
	Knowledge of clinical symptoms	Correct, n (%)	Incorrect, n (%)
1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia	4658 (88.3)	615 (11.7)
2	Unlike the common flu, people who are infected with COVID-19 have less flu and sneezes	2646 (50.2)	2627 (49.8)
3	Currently, there is no effective cure for COVID-19, but the treatment as early as possible can help most patients recover from infection	4515 (85.6)	758 (14.4)
4	People who are elderly, have chronic diseases, and obesity are more likely to have severe cases	4309 (81.7)	964 (18.3)
	<b>Knowledge of transmission routes</b>		
5	Contact with wild animals will lead to viral infection of COVID-19	1464 (27.8)	3809 (72.2)
6	People with COVID-19 cannot infect other people who have no fever	393 (7.5)	4880 (92.6)
7	The COVID-19 virus spreads through respiratory droplets in infected people	4567 (86.6)	706 (13.4)
	<b>Knowledge of prevention and control</b>		
8	People can wear medical masks to prevent infection of the COVID-19 virus	3972 (75.3)	1301 (24.7)
9	Children and adolescents to take any action to prevent infection with the COVID-19 virus	230 (4.4)	5043 (95.6)
10	To prevent COVID-19, One should avoid going to crowded places	5145 (97.6)	128 (2.4)
11	Isolation is an effective way to reduce the spread of COVID-19	5186 (98.4)	87 (1.7)
12	People who have contact with someone infected with the COVID-19 virus must immediately be isolated independently for 14 days	5205 (98.7)	68 (1.3)

**Table 2. Characteristics of respondents with a score of Knowledge about COVID-19**

Characteristics		n	Knowledge score	t/F	P
Sex	Male	1336	73.3	-10.6	0.000***
	Female	3937	77.2		
Age	Youth	745	74.6	8.642	0.000***
	Adult	4474	76.5		
	Elderly	54	75.0		
Marital status	Single	3393	75.4	34.6	0.000***
	Married	1229	78.5		
	Widow/ widower	51	72.4		
Education	Elementary – high school	3201	75.1	36.955	0.000***
	Diploma, bachelor	1731	77.9		
	Master, Doctor	341	77.7		
Occupation	Not working	2057	75.7	-2.553	0.011*
	Working	3216	76.5		
Residential areas	Western Indonesia	4078	76.3	1.218	0.223
	Eastern Indonesia	1195	75.8		
Information media	Print media	31	70.2	27.35	0.000***
	Electronic media	1071	76.7		
	Social media	4086	76.2		
	Friends / Family	74	73.9		
	Never get information	11	41.7		

\*p&lt;0.05, \*\*p&lt;0.01 \*\*\*p&lt;0.001

**Table 3. Factors related to Knowledge about COVID-19**

Variables	Coefficient	SE	t	p
Sex (male vs female)	-4.273	0.371	-11.525	0.000***
Education (diploma, bachelor vs others)	1.865	0.391	4.764	0.000***
Education (Master, Doctor vs others)	1.595	0.750	2.126	0.034*
Marital status (married vs others)	5.558	1.645	3.378	0.001**
Information media 1 (print media vs others)	25.576	4.020	6.361	0.000***
Information media 2 (electronic media vs others)	32.043	3.472	9.228	0.000***
Information media 3 (social media vs others)	31.956	3.462	9.230	0.000***
Information media 4 (friends/family vs others)	29.852	3.699	8.070	0.000***

\*p&lt;0.05, \*\*p&lt;0.01 \*\*\*p&lt;0.001

## Discussion

Around 5823 respondents, over 16 years old, were involved in this study. According to gender shows that male was about 1336 respondents, and female was about 3937 respondent (Table. 2). Most of the respondents were classified as adults, unmarried, education less than high school, and working. Most of the areas where respondents live were in western Indonesia. Respondents used social media as a media that was often used to obtain information about COVID-19.

Following the knowledge score, it was revealed that there were differences between gender, age, marital status, education, and information media, which were significantly different ( $p < 0.001$ ). This was consistent with previous studies that found that the characteristics of respondents based on gender, age, marital status, education, and information media were significantly different from the score of public knowledge.(19–22) The knowledge score based on the respondent's occupation characteristics also gained a significant difference ( $p < 0.05$ ). This was in line with previous studies that found that jobs had a real difference to the level of people's knowledge.(19) The knowledge score, according to the area of residence, was not significantly different ( $p > 0.05$ ). This was different from previous research, which stated that the location of residence had a significant difference in the score of public knowledge.(19,23) The knowledge score regarding the information media obtained by the respondents had a significant difference ( $p < 0.001$ ). In general, demographic characteristics such as gender, marital status, education, occupation, location of residence, and information media had a significant relationship with the level of Knowledge about COVID-19, which was generally consistent with previous studies.(19,24,25)

The public knowledge will increase awareness of health, particularly in efforts to cope with and efforts to prevent the COVID-19 outbreak. Public knowledge is the basis for knowing the lifestyle and behavior in society, so it is a key determinant for knowing clinical symptoms and efforts to prevent and control the community.(26)

Multilevel linear regression shows that gender had an impact on Knowledge of COVID-19. Women had better knowledge than men ( $\beta = -4273$ ,  $p < 0.001$ ) (Table. 3). Previous research revealed that gender had a significant relationship to Knowledge about COVID-19.(19)

Women more often access information than men. During the current pandemic, women spend more time at home than men, so they have more time to access information about the current pandemic.(27)

Education (diploma, S1 vs others) ( $\beta = 1.865$ ,  $p < 0.001$ ) had a relationship to knowledge. Previous studies also found that low education had a relationship with knowledge.(28) Education (Master, Doctor vs. others) ( $\beta = 1.595$ ,  $p < 0.05$ ) had a significant relationship to people's knowledge. This was in accordance with previous research, which showed that education had a significant relationship to Knowledge about COVID-19.(19) Higher education affects a person's level of knowledge. The higher the level of education, the higher the person's level of knowledge related to COVID-19.(22) Education is one of the components in the prevention and control of diseases. Knowledge is one of the crucial educational components of changing lifestyles.(26)

Marital status had a significant relationship to people's knowledge over the COVID-19. Respondents who were married ( $\beta = 5,558$ ,  $p < 0.01$ ) had a significant relationship with Knowledge about COVID-19 compared to others who were unmarried and widows/ widowers. This was consistent with previous research, which found that marital status had a significant relationship to a person's level of knowledge.(19,22) A person who already married and has a family will share information about the COVID-19 that he gets with his partner and become a reciprocal relationship and support each other so that they take care of each other in efforts to prevent the transmission of COVID-19 (29,30). Demographic factors such as gender and marital status are closely related to the level of Knowledge of COVID-19, which is generally consistent with previous studies on the SARS outbreak in 2013.(16)

Information media is one of the factors related to people's knowledge.(27) Based on this study, it showed that there were 4 media related to the Knowledge of Indonesian society. Information media was related to public knowledge, including print media ( $\beta = 25,576$ ,  $p < 0.001$ ), electronic media ( $\beta = 32,043$ ,  $p < 0.001$ ), social media ( $\beta = 31,956$ ,  $p < 0.001$ ), and media through friends/ family ( $\beta = 29,852$ ,  $p < 0.001$ ). Previous studies revealed that only a small part of the community had access to information media through print, electronic media, and friends/ family.

However, all information media plays a critical role in supporting the level of public Knowledge regarding COVID-19.(27) One of the information channels that are widely used and become a reference for the community as the main source of information is social media. (20,28,31) Social media is the most sought-after and popular means of gathering information, especially for millennials.(32,33) In addition, social media has a role as dissemination of information, remote monitoring, and health care.(34) The use of social media from year to year has increased significantly.(35) The most significant increase was during the pandemic, where most people rely on the internet for communication. Social media is the most updated media in terms of information, especially the latest news about the development of COVID-19 (36).

## Conclusion

Our research shows that the knowledge of the Indonesian people about COVID-19 is high. Factors that influence this knowledge are gender, education, marital status, and information media used to gather information about COVID-19. Most of the respondents do not know several aspects regarding clinical symptoms, transmission routes, prevention, and control efforts. Therefore it is necessary to have a comprehensive, planned, and structured educational program that can be carried out to increase the level of better knowledge. During the current outbreak, the public must follow government instructions in adhering to health protocols as a response and prevention measure for COVID-19

## Conflict Of Interest

No conflict of interest

## Acknowledgments

The authors thank all respondents who were involved for their cooperation and support in this study.

## References

- Zhi ZLXBXZ. [The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China]. *Chin J Epidemiol* [Internet]. 2020;2(41):145–51. Available from: <http://rs.yiigle.com/yufabiao/1181998.htm>
- Harapan H, Itoh N, Yufika A, Winardi W, Keam S, Te H, et al. Coronavirus disease 2019 (COVID-19): A literature review. *J Infect Public Health* [Internet]. 2020;13(5):667–73. Available from: <https://doi.org/10.1016/j.jiph.2020.03.019>
- Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *J Adv Res* [Internet]. 2020;24:91–8. Available from: <https://doi.org/10.1016/j.jare.2020.03.005>
- Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;395(10223):497–506.
- Guan W, Ni Z, Hu Y, Liang W, Ou C, He J, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med* [Internet]. 2020 Apr 30;382(18):1708–20. Available from: <http://www.nejm.org/doi/10.1056/NEJMoa2002032>
- Lake MA. What we know so far: COVID-19 current clinical knowledge and research. *Clin Med J R Coll Physicians London*. 2020;20(2):124–7.
- Petropoulos F, Makridakis S. Forecasting the novel coronavirus COVID-19. *PLoS One*. 2020;15(3):1–8.
- World Health Organization. Coronavirus (COVID-19) [Internet]. Coronavirus (COVID-19). 2020. Available from: <https://covid19.who.int/>
- Rahman A, Sathi NJ. Knowledge, attitude, and preventive practices toward COVID-19 among Bangladeshi internet users. *Electron J Gen Med*. 2020;17(5).
- COVID-19 TGPP. Peta Sebaran COVID-19 di Indonesia [Internet]. 2020. Available from: <https://covid19.go.id/peta-sebaran>
- Gandhi M, Yokoe DS, Havlir D V. Asymptomatic transmission, the achilles' heel of current

- strategies to control Covid-19. *N Engl J Med.* 2020;382(22):2158–60.
12. Ajilore K, Atakiti I, Onyenakeya K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: Suggestions for improving future Ebola prevention education programmes. *Health Educ J [Internet].* 2017 Oct 15;76(6):648–60. Available from: <http://journals.sagepub.com/doi/10.1177/0017896917710969>
  13. Tachfouti N, Slama K, Berraho M, Nejari C. The impact of knowledge and attitudes on adherence to tuberculosis treatment: A case-control study in a moroccan region. *Pan Afr Med J.* 2012;12(1):1–8.
  14. Sinuraya RK, Abdulah R, Koyama H. Knowledge, Attitude, and Practice During the COVID-19 Pandemic : A Review. *J Multidiscip Healthc.* 2020;13:727–33.
  15. Person B, Sy F, Holton K, Govert B, Liang A, Garza B, et al. Fear and Stigma: The Epidemic within the SARS Outbreak. *Emerg Infect Dis [Internet].* 2004 Feb;10(2):358–63. Available from: [http://wwwnc.cdc.gov/eid/article/10/2/03-0750\\_article.htm](http://wwwnc.cdc.gov/eid/article/10/2/03-0750_article.htm)
  16. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The Psychological Impact of the SARS Epidemic on Hospital Employees in China: Exposure, Risk Perception, and Altruistic Acceptance of Risk. *Can J Psychiatry [Internet].* 2009 May;54(5):302–11. Available from: <http://journals.sagepub.com/doi/10.1177/070674370905400504>
  17. Zipprich HM, Teschner U, Witte OW, Schönenberg A, Prell T. Knowledge, Attitudes, Practices, and Burden During the COVID-19 Pandemic in People with Parkinson's Disease in Germany. *J Clin Med.* 2020;9(6):1643.
  18. Toja B, Academy N, Toja B, Academy M, Toja B, Academy M. The Relationship Between Knowledge , Attitude , and Readiness of Academic Community in COVID-19 Spread Prevention : Batari Toja Nursing Academy , Watampone. *Int J Heal Med Sci.* 2020;3(March):72–8.
  19. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci.* 2020;16(10):1745–52.
  20. Saqlain M, Munir MM, Rehman SU, Gulzar A, Naz S, Ahmed Z, et al. Knowledge , attitude , practice and perceived barriers among healthcare workers regarding COVID-19 : a cross- sectional survey from Pakistan. *J Hosp Infect [Internet].* 2020;105(3):419–23. Available from: <https://doi.org/10.1016/j.jhin.2020.05.007>
  21. Brief AT. Insight why stunting matters [Internet]. 2010. Available from: [http://www.aliveandthrive.org/sites/default/files/Brief 2 Maret 2019- Why stunting matters\\_1.pdf](http://www.aliveandthrive.org/sites/default/files/Brief%20Maret%202019-Why%20stunting%20matters_1.pdf)
  22. Alobuia WM, Dalva-baird NP, Forrester JD, Bendavid E, Bhattacharya J, Kebebew E. Racial disparities in knowledge , attitudes and practices related to COVID-19 in the USA. 2020;1–9.
  23. Azlan AA, Hamzah MR, Jen T, Id S, Hadi S, Id A. Public knowledge , attitudes and practices towards COVID-19 : A cross-sectional study in. 2020;1–15. Available from: <http://dx.doi.org/10.1371/journal.pone.0233668>
  24. Vartti AM, Oenema A, Schreck M, Uutela A, De Zwart O, Brug J, et al. SARS knowledge, perceptions, and behaviors: A comparison between finns and the dutch during the SARS outbreak in 2003. *Int J Behav Med.* 2009;16(1):41–8.
  25. Alahdal H, Basingab F, Alotaibi R. An analytical study on the awareness, attitude and practice during the COVID-19 pandemic in Riyadh, Saudi Arabia. *J Infect Public Health [Internet].* 2020;2. Available from: <https://doi.org/10.1016/j.jiph.2020.06.015>

26. Foma MA, Saidu Y, Omoleke SA, Jafali J. Awareness of diabetes mellitus among diabetic patients in the Gambia: a strong case for health education and promotion. *BMC Public Health* [Internet]. 2013 Dec 5;13(1):1124. Available from: <http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-1124>
27. Hoda J. Identification of information types and sources by the public for promoting awareness of Middle East respiratory syndrome coronavirus in Saudi Arabia. *Health Educ Res*. 2016;31(1):12–23.
28. Bawazir A, Al-Mazroo E, Jradi H, Ahmed A, Badri M. MERS-CoV infection: Mind the public knowledge gap. *J Infect Public Health* [Internet]. 2018;11(1):89–93. Available from: <https://doi.org/10.1016/j.jiph.2017.05.003>
29. Hart JL, Turnbull AE, Oppenheim IM, Courtright KR. Family-Centered Care During the COVID-19 Era. *J Pain Symptom Manage* [Internet]. 2020;60(2):e93–7. Available from: <https://doi.org/10.1016/j.jpainsymman.2020.04.017>
30. The COVID-19 Pandemic: A Family Affair. *J Fam Nurs*. 2020;26(2):87–9.
31. Islam MS, Sarkar T, Khan SH, Mostofa Kamal A-H, Hasan SMM, Kabir A, et al. COVID-19-Related Infodemic and Its Impact on Public Health: A Global Social Media Analysis. *Am J Trop Med Hyg* [Internet]. 2020;1–9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/32783794>
32. Tri Sulistyaningtyas, Jejen Jaelani YS. Power of Knowledge and Community Social Class above Covid-19 Pandemic Information on Social Media. *J Komun Ikat Sarj Komun Indones*. 2017;5(March):10110.
33. R J, D B, waran K. Social Media Reigned by Information or Misinformation About COVID-19: A Phenomenological Study. *SSRN Electron J*. 2020;(May).
34. Goel A, Gupta L. Social Media in the Times of COVID-19. *JCR J Clin Rheumatol* [Internet]. 2020 Jun 8; Available from: <https://journals.lww.com/10.1097/RHU.0000000000001508>
35. Albarrak AI, Mohammed R, Al Elayan A, Al Fawaz F, Al Masry M, Al Shammari M, et al. Middle East Respiratory Syndrome (MERS): Comparing the knowledge, attitude and practices of different health care workers. *J Infect Public Health* [Internet]. 2019;617:6–13. Available from: <https://doi.org/10.1016/j.jiph.2019.06.029>
36. Farooq A, Laato S, Islam AKMN. Impact of Online Information on Self-Isolation Intention During the COVID-19 Pandemic: Cross-Sectional Study. *J Med Internet Res* [Internet]. 2020 May 6;22(5):e19128. Available from: <http://www.jmir.org/2020/5/e19128/>