Knowledge, Attitudes, and Practices Towards COVID-19 among North Sulawesi Indonesia Residents

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Article Info

Abstract

Background: Coronavirus Disease 2019 (COVID-19) was declared a global pandemic by WHO. To prevent theCOVID-19 transmission is depend on community compliance with health protocols. Public compliance in implementing health protocols during the new normal period is closely related to the Knowledge, Attitudes, and Practices (KAP) about COVID-19.

Method: A cross-sectional online survey was used to survey the people of North Sulawesi Indonesia. Data were collected from September 17 to September 30, 2020, with 705 respondents (Mean age: 23.8 ± 8.7 years; 70.8 % females).

Result: From 705 respondents, 23% of them knew the cause of COVID-19, 31.5% knew the symptoms of COVID-19 and 31.5% understood the definition of new normal. However, 50.4% of respondents were not aware of an information site related to COVID-19 provided by the government and only 28.9% of respondents knew about preventions of COVID-19 related to washing hands with soap. Overall, there were 29.2% of respondents had poor knowledge about COVID-19. The majority of respondents hadpositive attitudes and good behaviors regarding the symptoms and prevention of COVID-19. The demographic factor significantly related to the level of knowledge is gender (POR: 1.8; 95% CI = 0.75-0.90, P <0.001).

Conclusion: The majority of respondents had good knowledge, positive attitudes, and good practices toward the prevention of COVID-19. However, the knowledge of certain topics was still inadequate.

How to Cited

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Introduction

Coronavirus Disease 2019 (COVID-19) was declared a global pandemic by WHO. According to the report of WHO, there were 30,675,675 positive cases of COVID-19 with a death rate of 3% on September 20, 2020 (WHO, 2020). At the same time, in Indonesia, COVID-19 cases have been reaching 244,676 cases with a death rate of 4%. The cases of COVID-19 in Indonesia come from all provinces including North Sulawesi with 4,295 cases were recorded and a death rate of 4% (BNPB, 2020).

Indonesia is one of the epicenters for the spread of COVID-19. To prevent COVID-19 transmission in communities, the government implemented a physical distancing policy by establishing PSBB (a Large-Scale Social Restriction policy) in April 2020 (Presiden RI, 2020). At the end of June, the PSBB policy was withdrawn and replaced with a "new normal" which allows people to be able to move outside their homes by implementing health protocols (Kompas, 2020). In this new normal period, the effort of suppressing COVID-19 cases is very dependent on community discipline in implementing health protocols. Therefore, information about people's knowledge, attitudes, and behaviors regarding COVID-19 during the new normal period is very crucial. This information can be an input for the government or related agencies in making policies related to health promotion during the pandemic period.

At the early of the COVID-19 pandemic in Indonesia, the level of knowledge related to COVID-19 among young people was still lacking. However, these results do not represent people's knowledge from all provinces, especially in central and eastern Indonesia. Young people prefer accessing information from social media rather than from websites provided by the government (Halim et al., 2020). North Sulawesi, as one of the provinces affected by COVID-19, which is located in the central part of Indonesia has become the place chosen by researchers. This study aims to determine the information about adult people's knowledge, attitudes, and behaviors regarding COVID-19 during the new normal in North Sulawesi Indonesia. It is hoped that the research findings are locally specific which allows health promotion interventions can be done more effectively.

Methods

A cross-sectional design was chosen as the research design with online sampling time on 17-30 September 2020. The inclusion criteria are people who live in North Sulawesi with the age ≥ of 15 years old. Participants who work in the health sector are excluded from this study.

The study team strictly followed ethical standards in research. All participants were asked to provide informed consent, which if they agreed they would fill out online questionnaires. All individual information was kept confidential and not reported in the paper. The questionnaire was compiled based on information available in the Ministry of Health's guidebook on COVID-19 and it was a modification of the previous research questionnaire (Halim et al., 2020; Kementrian Kesehatan, 2020). The questions on the questionnaire were open, close, and scaled questions. Questions aimed to evaluate the knowledge about virology, symptoms, risk factors, preventions, and management of symptoms. Each correct answer is assigned a score of 10 on knowledge. Participants who had a score of more than 60 were categorized as the ones who had good knowledge.

The questionnaire consists of two parts, namely demographic characteristics and KAP (Knowledge, Attitudes, Practices). Demographic variables include gender, age group, marital status, education, occupation, and income. Knowledge consists of 10 questions, namely four questions about clinical symptoms and causes of COVID-19 (K1-K4), four questions about prevention (K5-K7), and three questions about control of transmission by the government (K8-K10). The types of answers to the questionnaire are: "true", "false" and "I don't know". Each correct answer is given a value of 10 points, where if the total score is ≥ 60, it is categorized as good knowledge and if the total score is ≤ 60, it is categorized as poor knowledge. Respondents' attitudes regarding the prevention of COVID-19 are assessed based on 10 statements regarding the prevention of COVID-19. Answers to statements are given

in score of 1 – 5 where 1 = very unimportant / strongly disagree, 2 = not important / disagree, 3 = less important / less agree, 4 = important / agree, 5 = very important / strongly agree. If the score ≥ 40, it is categorized as agree/important, and if ≤ 40, it is categorized as disagree/not important. Meanwhile, 10 questions are used in the questionnaire to assess COVID-19 prevention behaviors where answers to each question are given in scores of 1 – 5. Score 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always. A score of 40 – 50 falls in the good practice category and a score < 40 falls in the category of poor practice.

Result And Discussion

The total sample of this study consists of 705 participants. All participants came from all districts in North Sulawesi. The mean age of the participants is 23.81 ± 8.67 which most of the participants are women (81.1%), 15-29 years old (81.6%), single (78.9%), and the majority of students (67.7%).

The majority of respondents correctly answered questions regarding the mode of transmission of SARS-CoV-2, the occurrence of lung damage due to COVID-19, and prevention by using masks and physical distancing. Only a small proportion of respondents knew about the causes of COVID-19 (K1), clinical symptoms (K3), prevention by washing hands (K8), and not many of them (31.5%) understood about "new normal" (K9), and almost half of the respondents were not aware of any websites provided by the government as sources of information related to COVID-19 (K10) (Table 1). Most of the information sources used by respondents come from social media (46.3%) and only a small proportion of respondents sought information through government websites. The rest of the respondents obtained information from television, online news, family/friends, and health workers. Overall, 70.8% of respondents had a good level of knowledge.

Table 1. Questionnaire of knowledge towards COVID-19

Questions	Options
Knowledge (correct rate, % of the total sample)	
K1. COVID-19 is caused by bacteria that enter the body (23%)	True, false, I don't know
K2. Sneezing can transmit the SARS-CoV-2 (94.2%)	True, false, I don't know
K3. Diarrhea is not one of the symptoms that may be found in COVID-19 (48.5%)	True, false, I don't know
K4. COVID-19 can damage the lungs (72.5%)	True, false, I don't know
K5. Objects that are often held by many people can be a source of transmission of COVID-19 (92.8%)	True, false, I don't know
K6. Using a mask is one way to prevent transmission of COVID-19 (98.4%)	True, false, I don't know
K7. Physical distancing space between people was 2 meters (81.7%)	True, false, I don't know
K8. It is recommended that you wash your hands with soap for at least 10 seconds (28.9%)	True, false, I don't know
K9. "New Normal" means being able to resume activities outside the home as before the COVID-19 pandemic (31.5%)	True, false, I don't know
K10. There is a government's official website for COVID-19 (50.4%)	True, false, I don't know

K = Knowledge

The statement about attitudes consists of 10 items where the majority of respondents considered that using masks, maintaining distance, and washing hands are important / very important to prevent transmission of COVID-19 (Table 2).

Table 2. Questionnaire of Attitudes towards COVID-19

Variables	n (%)
A1. Keeping physical distancing of at least 2 meters can reduce transmission of COVID-19	654 (92.8)
A2. Covering the mouth and nose using tissue/the arm when coughing or sneezing can prevent transmission of COVID-19	633 (89.8)
A3. Washing hands with soap for at least 20 seconds can prevent transmission of COVID-19	645 (91.5)
A4. Fruits and vegetable consumption will boost our immunity to prevent COVID-19	681 (96.6)
A5. Using a mask is one way to prevent transmission of COVID-19	679 (96.3)
A6. People who are in close contact with COVID-19 patients must take a SWAB test even if they have no symptoms	668 (94.8)
A7. "New Normal" means being able to live outside the home by implementing health protocols	659 (93.5)
A8. COVID-19 patients don't need to be stigmatized	622 (88.2)

A = Attitude

Tabel 3. Practices of COVID-19 prevention among respondents.

Variables	n (%)
P1. Washing hands with soap for at least 20 seconds after doing activities	495 (70.2)
P2. Covering the mouth and nose using tissue/the arm when coughing or sneezing	595 (84.4)
P3. Looking for information through the official website of the government (example: covid19.go.id)	299 (42.4)
P4. Using a mask when on the outdoor activities	675 (95.7)
P5. Have a habit of touching face, nose, and eyes	531 (75.3)
P6. Avoiding handshakes	509 (72.2)
P7. Avoiding the crowd	546 (77.4)
P8. Using hand sanitizer	409 (58.0)
P9. Physical distancing with others was 2 meters	553 (78.4)

P = Practice

Based on bivariate (chi-square) analysis, it is found that several variables have a significant association with the level of knowledge, namely gender, marital status, occupation, education, and income (p<0.05). The proportion of good knowledge is mostly possessed by respondents with characteristics: women, age of 30-49 years old, married, having a high education, working as professional/businessman and having a high income (Table 4). From multiple logistic regression analysis, it is found that the odds of knowledge in females are 1.8 times higher than that of males which is statistically significant (POR = 1.8; 95% CI: 1.2-2.5). (Table 5)

Table 4. Association between sociodemographic variables and knowledge scale (n = 705)

Characteristics		Knowledge		Chi-Square	p
		Poor n (%)	Good n (%)		
Gender	Male	74 (35.9)	132 (64.1)	5.872	0.015
	Female	132 (26.5)	367 (73.5)		
Age-group (years)	15-29	177 (30.8)	398 (69.2)		
	30-49	27 (24.8)	82 (75.2)	5.661	0.059
	50+	2 (9.5)	19 (14.9)		
Marital status	Married	31 (21.5)	113 (78.5)		
	Unmarried	173 (31.1)	383 (68.9)	5.593	0.061
	Others	2 (40)	3 (60)		
Education	Middle school and below	158 (33.1)	319 (66.9)		
	Associate's & Bachelor's degree	42 (20.6)	163 (79.4)	11.070	0.004
	Master's degree and above	6 (25.0)	18 (75.0)		
Occupation	Unemployed/housewife/student	170 (33.0)	345 (67.0)		
	Professional/civil servant	35 (19.6)	144 (80.4)	14.913	0.001
	Business/trader	1 (9.1)	10 (90.9)		
Income category	Don't have any income yet	157 (32.4)	328 (67.6)		
	IDR < 1.5 M	23 (38.3)	37 (61.7)		
	IDR 1.5 – 2.4 M	7 (21.9)	25 (78.1)	20.215	0.000
	IDR 2.5 M – 3.5 M	13 (20.3)	51 (79.7)		
	IDR > 3.5 M	6 (9.4)	58 (90.6)		

*"Others" included re-married, separated, divorced, and widowed.

Table 5. Multivariate analysis of the determinants of COVID-19 knowledge.

Characteristics		POR	95% CI		p
			Lower	Upper	
Gender	**Male**	**1**			**0.002**
	Female	**1.799**	**1.247**	**2.596**	
Age-group (years)	15-29	1			
	30-49	0.671	0.311	1.449	0.310
	50+	2.083	0.386	11.238	0.393
Marital status	Married	1			
	Unmarried	0.88	0.465	1.665	0.694
	Others	0.218	0.027	1.776	0.155
Education	Middle school and below	1			
	Associate's & Bachelor's degree	1.418	0.894	2.251	0.138
	Master's degree and above	0.639	0.198	2.064	0.454
Occupation	Unemployed/housewife/student	1			
	Professional/civil servant	1.854	0.731	4.700	0.193
	Business/trader	4.155	0.417	41.407	0.225
Income category	Don't have any income yet	1			
	IDR < 1.5 M	0.555	0.264	1.17	0.122
	IDR 1.5 – 2.4 M	1.084	0.337	3.488	0.892
	IDR 2.5 M – 3.5 M	0.996	0.317	3.126	0.994
	IDR >3.5 M	3.374	0.936	12.17	0.063

This study shows that most respondents (70.8%) had a good understanding of COVID-19. The previous study has shown a high level of knowledge score about COVID-19 (Al-Hanawi, 2020; Bates et al., 2021;). Another study showed different results where the proportion of good knowledge in this study is better than in Mizan(47%), Beret (41.4%),India (40%), Ethiopia (23.5%) and Bangladesh (48.3%) (Angelo et al., 2021; Hani et al., 2020; Jagajeet et al., 2020; Handebo et al., 2021; Ferdous et al., 2020).

However, the knowledge of certain topics was still inadequate. The majority of respondents did not understand the definition of "new normal", the majority of respondents did not know the existence of any government websites related to COVID-19, and the majority of respondents did not understand the length of time needed to wash hands with soap and had a lack of knowledge about the causes of COVID-19. The findings of this study are similar to the findings of the study at the beginning of the COVID-19 outbreak with a population of young people in western Indonesia which the majority of respondents had a lack of knowledge about washing hands practice (Halimet al., 2020).

Although they already know that washing hands is one way to prevent transmission of COVID-19, the majority of respondents did not know how long it takes to wash their hands properly. Thus, it can be concluded that the behavior of washing hands by the majority of respondents may not match the ideal time of washing hands recommended by the government, which is 20 seconds (KementrianKesehatan, 2020). In this study, the proportion of respondents who washed their hands reached 70.2%. (Table 3). The high compliance with handwashing despite insufficient knowledge could be due to fear of the pandemic atmosphere.Previous research has shown that fear can motivate healthy behavior among people individuals especially during epidemics, but such behavior may not be sustainable (Ufuwa et al., 2020). The result of different from research in Nigeria which found that good hand washing practice only reached 22%, in Ethiopia 57.5% and 36,9%, (Ilesanmi, O. and Afolabi, A., 2020; Feleke et al., 2021; Molla and Abegas, 2021).

Most of the respondents had the wrong understanding that the new normal is a condition where people can return to their activities outside the home as before the pandemic (without strict health protocols). Lack of understanding of the definition of new normal can be the basis for the government to use other phrases for the same purpose. For example, the government uses the phrase "adaptation to new habits period".

Most respondents were not aware of the existence of an official government website that provides information related to COVID-19, and as a result, very few respondents seek information through the government website. Most respondents were looking for information about COVID-19 through social media. This is in line with the research conducted in India, Jordan, and among health workers (Dkhar et al., 2020; Singh et al., 2020; Olaimat et al., 2020; Baghavathula et al., 2020). It indicates that social media can be the best alternative for health promotion targeting the young to an adult population.

Most of the respondents had good knowledge regarding the prevention of COVID-19, had positive attitudes and good behaviors regarding the prevention of COVID-19. Following the theory of behavior where good health behavior is preceded by good knowledge and attitudes (Notoadmodjo, 2010). Another factor is likely due to the existence of a government policy that requires people to comply with health protocols in doing their activities. Likewise, research results in Malaysia and India at the start of the pandemic show that the majority of respondents had good knowledge, attitudes, and behaviors regarding COVID-19 (Azlan et al., 2020).

Based on demographic characteristics, the proportion of respondents who have good knowledge is dominated by females, age of 30-49 years, highly educated, and with an income >3.5 million IDR. It is in line with the research conducted in China which shows that the majority of respondents who answered the questionnaire correctly were female and well-educated.From the logistic regression analysis, gender and level of knowledge are significantly related where the odds of knowledge in women

are 1.8 times higher compared to men (95% CI=1.25-2.59). Studies in Thailand showed that the odds of knowledge in women were 2.52 times higher than men (95% CI= 1.36-4.68) (Srichan et al., 2020). The results of research in China, Japan, and Ethiopia also show that the male gender is associated with risky behaviors (Zhong et al., 2020; Hatabu et al., 2020; Walle et al., 2021). This finding is consistent with another recent study in several countries (Bekele et al., 2020; Hatabu et al., 2020; Lee et al., 2021; Arslanca et al., 2021).

The weakness of this study is that respondents are limited to only those who can access the internet. The population at the rural level and parents who usually have poor knowledge cannot be reached maximally in this study. Another limitation is that the questionnaire is filled in by the respondents themselves so that the answers regarding attitudes and behaviors may be filled in according to what the respondents expect them to be. Not what they feel and do.

Conclusion

Overall, the majority of respondents had good knowledge, positive attitudes, and good practices toward the prevention of COVID-19. However, the knowledge of certain topics such as causes, symptoms, definitions of new normal, availability of information on government websites, and about prevention of transmission by washing hands with soap was still inadequate.

References

Al-Hanawi, MK. et al. 2020. Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Frontiers in Public Health*, 8: article 217. doi:https://doi.org/10.3389/fpubh.2020.00217

Angelo, AT. et al. 2021. Knowledge, Attitudes, and Practices Toward Covid-19 and Associated Factors Among University Students in Mizan Tepi University, 2020. *Infection and Drug Resistance*, 14: 349-360. doi: 10.2147/IDR.S299576

Arslanca, T. et al. 2021. Knowledge, preventive behaviors and risk perception of the COVID-19 pandemic: A cross-sectional study in Turkish health care workers. *PLoS ONE*, 16(4): e0250017

Azlan, AA. et al. 2020. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia.*PLoS ONE*, 15(5): 1–15. doi: 10.1371/journal.pone.0233668.

Bates, BR. et al. 2021. Knowledge, attitudes, and practices towards COVID-19 among Venezuelans during the 2020 epidemic: An online cross-sectional survey. *PLoS ONE*, 16(4): 1-16. available from: https://doi.org/10.1371/journal.pone.0249022

Bekele, F. et al. 2020. Patterns and associated factors of COVID-19 knowledge, attitude, and practice among general population and health care workers: A systematic review. *SAGE Journal,* 8: 1-10. doi: https://doi.org/10.1177/2050312120970721

Bhagavathula, AS. et al. 2020. Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey of Healthcare Workers. *MedRxiv.* Available from: https://doi.org/10.1101/2020.03.09.20033381

BNPB Indonesia. Data Sebaran. Gugus Tugas Percepatan Penanganan COVID-19. [Accessed September 21, 2020]. Available from: https:// covid19.go.id/

Dkhar, SA.et al. 2020. Quansar R, Saleem SM, Khan SM. Knowledge, Attitude, and Practices Related to COVID-19 Pandemic among Social Media Users in J&K, India'. *Indian Journal of Public Health*, 64(2): 205-210.

Feleke, BT., et al. 2021 Knowledge, attitude and preventive practicetowards COVID-19 and associated factors among outpatient service visitors at Debre Markos compressive specialized hospital, north-west Ethiopia, 2020. *PLOS ONE*, 16(7): e0251708. Availabel from: https://doi.org/10.1371/journal.pone.0251708

Ferdous, MZ. et al. 2020. Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *PLOS ONE*, 15(10). doi: 10.1371/journal.pone.0239254

Halim, DA. et al. 2020. Understanding of Young People About COVID-19 During Early Outbreak in Indonesia. *Asia-Pacific Journal of Public Health*, 32 (6–7) : 363–365. doi: 10.1177/1010539520940933.

Handebo, S. et al. 2021. Determinants of COVID-19-related knowledge and preventive behaviours among students in reopened secondary schools: cross-sectional study. *BMJ Open*, 11(4): e050189. Available from: 10.1136/bmjopen-2021-050189

Hani A, Ni'meh A, Lilian S, et al. 2020. Knowledge,

attitudes and practices about coronavirus disease (covid-19) among Birzeit University students: a cross-sectional study 2020. *Research Square*, 1-30. doi:10.21203/rs.3.rs-83

Hatabu, A. et al. 2020. Knowledge, attitudes, and practices toward COVID-19 among university students in Japan and associated factors: An online cross-sectional survey. *PLOS ONE*, 15 (12): 1-19. Available from: https://doi.org/10.1371/journal.pone.0244350

Ilesanmi, O. and Afolabi, A. 2020.Perception and practices during the COVID-19 pandemic in an urban community in Nigeria: a cross-sectional study.*PeerJ*, 8: e10038. doi: 10.7717/peerj.10038.

Jagajeet S, Anshuman S, Dutt S. 2020. Assessing the knowledge, attitude and practices of students regarding the covid-19 pandemic.J *Health Manag.*, 2(22).

Kementrian Kesehatan RI: Pedoman Pencegahan dan Pengendalian Corona Virus Desease 2019 (COVID-19). Jakarta: 2020.

Kompas. Adaptasi New Normal, Kapolri Cabut Maklumat. [Accessed September 21, 2020].Available from: https://nasional.kompas.com/read/2020/06/26/12395951/adaptasi-new-normal-kapolri-cabut-maklumat?page=all.

Lee, M. et al. 2021. Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea', *BMC Public Health,* 21(295): 1-10. doi: https://doi.org/10.1186/s12889-021-10285-y

Molla, KA., Abegaz, SB. 2021. Community knowledge, attitude and practices to SARS-CoV-2 disease 2019 (COVID-19): A cross-sectional study in Woldia town, Northeast Ethiopia. *PLOS ON*, 16(4): e0250465. Available from:https://doi.org/10.1371/journal.pone.0250465

Notoadmodjo, S., 2010. Promosi Kesehatan Teori dan Aplikasi. Jakarta: Rineka Cipta.

Olaimat, AN. et al. 2020. Knowledge and Information Sources About COVID-19 Among University Students in Jordan: A Cross-Sectional Study. *Frontiers in Public Health,* 254(8). Availabe from: https://doi.org/10.3389/fpubh.2020.00254.

Presiden Republik Indonesia. PP RI Nomor 21 Tahun 2020 tentang Pembatasan Sosial Berskala Besar Dalam Rangka Percepatan Penanganan Corona Virus Disease 2019 (COVID-19). [Accessed September 21, 2020]. Available from: https://peraturan.bpk.go.id/Home/Details/135059/pp-no-21-tahun-2020.

Singh, JP. et al. 2020. Assessing the Knowledge, Attitude and Practices of Students Regarding the COVID-19 Pandemic. *Journal of Health Management,* 22(2): 281-290. Available from: https://doi.org/10.1177/0972063420935669

Srichan, P. et al. 2020. Knowledge, attitudes and preparedness to respond to COVID-19 among the border population of northern Thailand in the early period of the pandemic: a crosssectional study. *WHO South-East Asia Journal of Public Health,* 9(2): 118-125.

Ufuwa, IS. et al. 2020. Knowledge and risk perception towards Lassa fever infection among residents of affected communities in Ebonyi State, Nigeria: implications for risk communication.B*MC Public Health,* 20(1):1–10. DOI 10.1186/s12889-020-8299-3.

Walle, Z. et al. 2021. COVID-19 Prevention Practices and Determinant Factors Among Healthcare Professionals Working in Hospitals of South Gondar Zone, Northwestern Ethiopia. *Journal of Multidisciplinary Healthcare*, 14: 2287-2298. Available from: https://doi.org/10.2147/JMDH.S325127

WHO. WHO Coronavirus Disease (COVID-19) Dashboard. [Accessed September 21, 2020]. Available from: https://covid19.who.int/

Zhong, B. L. et al. 2020. 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. *International Journal of Biological Sciences,* 16(10): 1745–1752. doi: 10.7150/ijbs.45221.