

Knowledge, Attitude, Practice and Psychological response toward COVID-19 among Nurses during the COVID-19 outbreak in Northern Ethiopia, 2020

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Keywords: COVID-19, Nurses, Knowledge, Practice, Attitude, and Psychological Response

Posted Date: April 30th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-26236/v1>

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Version of Record: A version of this preprint was published at New Microbes and New Infections on November 1st, 2020. See the published version at <https://doi.org/10.1016/j.nmni.2020.100787>.

Abstract

Background: The Coronavirus Disease in 2019 (COVID-19) is not only the deadly outbreak disease but also it affects the mental status of the population including the nurses. Nurses play a vital role in dealing with COVID-19 victims. Nurse's infection control measures is affected by their knowledge, attitude, practice (KAP), and psychological responses towards COVID-19. Therefore, this study was aimed to determine the knowledge, attitude, practice, and psychological response among nurses toward the COVID-19 outbreak in Northern Ethiopia. The hospital-based cross-sectional study design was employed. The data were collected from March to April 2020. Data was collected through a self-administered questionnaire.

The data were entered into Epi-data manager version 4.2 and exported to SPSS 23 for analysis. Descriptive analysis was reported to describe the demographic, mean knowledge, attitude practice, and psychological response score of nurses.

Results: A total of 415 nurses were participated in this study making that 100% response rate. Of the participants 241(58.1%) were female. From the 415 nurses 307(74%), 278(67%), 299(72%%), and 354(85.3%) were had good knowledge, good infection prevention practice, a favorable attitude, and disturbed psychological response towards COVID-19 respectively.

Introduction

World Health Organization (WHO) declared that, the COVID-19 outbreak is as public health emergency in December 2019 [1]. Coronavirus disease 2019 (abbreviated "COVID-19") is an infectious respiratory illness caused by a novel coronavirus, first identified in Wuhan, China, in December 2019. Coronaviruses are a large class of viruses that have been relatively widespread all across the world. The Chinese authorities in Wuhan City, the capital of the province of Hubei, China, first announced this at the end of December 2019.[2-4]. This virus has low pathogenicity and high transmissibility capability[5].According to the WHO, the outbreak of coronavirus disease in 2019 (COVID-19) has been a pandemic that infected more than 3 million people at the time of writing this research paper and caused more than 200,000 deaths worldwide[6]. In Africa, morbidity and mortality reached greater than 30,000 and 1200 respectively. Of those 122 morbidities and 3 death were from Ethiopia[6].

It is well established that transmission of the disease among nurses is associated with overcrowding, absence of isolation room facilities, and environmental contamination. However, this is likely compounded by the fact that some nurses have inadequate awareness of infection prevention practices[7]. Knowledge of disease can influence nurses' attitudes and practices, disturbed psychological responses incorrect attitudes and practices directly increase the risk of infection[8]. Extensive media coverage of the epidemic can now influence the public's physical and psychological response to the infectious disease threat, which may inevitably amplify apprehension while serving as a pivotal tool to encourage precautionary and preventive measures[9].

Understanding nurses' knowledge, attitudes, practices (KAP), and psychological response help to predict the outcomes of planned behavior. Thus, this study aimed to investigate KAP and psychological response towards COVID-19 among nurses. If nurses' KAP concerning the virus and the factors that affect their attitudes and behaviors can be determined promptly in the early stages of the epidemic, then this information can inform relevant training and policies during the outbreak and guide nurses in prioritizing protection and avoiding occupational exposure.

Methods

Study setting and period

The hospital-based cross-sectional study design was used at governmental public hospitals of Northern Ethiopia. The study was conducted at the Aksum St.Mary general Hospital and Aksum comprehensive Specialized Hospital. The study period was from March to April 2020. The source population was all nurses who were working in the study area and the study population was all selected nurses from the selected health facilities

Sample size and sampling technique

Single population proportion formula was used and the following assumptions were made: 56.5 % nurses had good knowledge regarding COVID-19 from the previous studies conducted in Iran[10], 5% marginal error (d) with 95% confidence was employed as a parameter. By assuming 10%, nonresponse rate the final sample size was 415 nurses. A simple random sampling technique was used to select the study participants. The sample size was proportionally allocated to each public health facilities.

Data collection tools and procedures

A self-administered structured questionnaire was used to collect the knowledge, attitude, practice, and psychological response towards the COVID-19 outbreak. The questionnaire was adopted from other published articles [10-16] and further modification was done to fit the local context and research objective. Two BSc holder nurses were recruited for data collection and one MSc holder nurse was recruited as a supervisor. Overall, the data collection process was coordinated and supervised by the principal investigator.

Study variables

Dependent variable: Knowledge, attitude practice, and psychological response were the dependent variables.

Independent Variables: Socio-demographic and personal factors were the independent variables.

Operational definitions

Knowledge of COVID–19

The total knowledge score for the nurses varied between 0 (with no correct answer) and 18 (for all correct answers), and a cut off level of ≤ 9 was evaluated as poor knowledge, and >9 indicated good knowledge[13–17].

Attitude towards COVID–19

The question regarding the attitude was eleven (with minimum score 11 and maximum score 55). The score of the attitude based on 5 points Likert scale, in which the score of 1 to 5 was given from strongly disagree to strongly agree. A mean score >33 (answering for strongly agree or agree) was carried out as a favorable attitude and a score of 11 to 33 indicated an unfavorable attitude (answering strongly disagree or dis-agree or neutral)[11, 13, 15, 16].

Practice to prevent COVID–19

The question regarding the practice was fourteen (with minimum score 14 and maximum score 70). The score of the practice based on 5 points, in which the score of 1 to 5 was given from never to always. A mean score >42 (answering for always or most of the time or sometimes) was carried out as having good practice and a score of ≤ 42 indicated a poor practice (answering never or occasionally)[13, 15, 16].

Psychological response to COVID–19

The question regarding the psychological response was nine (with minimum score 9 and maximum score 36). The score of the psychological response based on 4 points, in which the score of 1 to 4 was given from not disturbed at all to almost daily disturbance. A mean score >18 (answering for almost daily disturbance or disturbed for more than 7 days) was carried out as having psychological disturbance and a score of ≤ 18 indicated a having not psychological disturbance (answering not disturbed at all or for a few days disturbance)[16].

Data quality control

Data collectors trained about the aim of the study and methods of data collection. The English version of the questionnaire was prepared. The supervisor and principal investigator made continuous follow-up and supervision for completeness and consistency of the data.

Data processing and analysis

The collected data was checked for its completeness manually and then entered into EPI-data manager version 4.2.1 and analyzed using SPSS version 23 statistical software package. Descriptive statistics including proportion, Percentage, ratios, frequency distribution, the mean and standard deviation were used to describe the normally distributed data, whereas, for the skewed data, the median and interquartile range was used.

Results

Socio-demographic characteristics

Four hundred fifteen nurses were fulfilling the inclusion criteria and included in this study. Of them, more than half 241(58.1) of the participants were females and the remaining were male participants. The median age of the participants was 30(\pm 3 IQR). Out of the total nurses, 334(80.5) were Christian orthodox in religion and the remaining were Muslim. Regarding participants, marital status about 335(80.7) was married and the remaining were single. Of the participants, 380(91.6%) and 35(8.4%) were Tigrian and Amhara in their Ethnic. More than half 241(58.1%) of the participants had greater than five years of work experience

Nurses knowledge toward COVID–19

Nurses knowledge towards the COVID–19 was measured using eighteen questionnaires and by proving numerical value for each question (1 = Yes (correct), 0 = No (incorrect answer (Table 1)

Table1: Knowledge of nurses toward the COVID-19 during the COVID-19 outbreaks in Northern Ethiopia,2020

Questions	Response	Frequency (%)
COVID-19 is a virus infection	Yes	388(93.5)
	No	27(6.5)
COVID-19 vaccine is available in markets	Yes	210(50.6)
	No	205(49.4)
Antibiotics are the first-line treatment	Yes	218(52.5)
	No	197(47.5)
Washing hands with soap and water, and using face masks can help in the prevention of disease transmission	Yes	319(76.9)
	No	96(23.1)
Healthcare workers are at a higher risk of infection	Yes	315(75.9)
	No	100(24.1)
COVID-19 could be fatal	Yes	300(72.3)
	No	115(27.7)
The main clinical symptoms of COVID-19 are fever, cough, sore throats and shortness breath and myalgia/ fatigue	Yes	374(90.1)
	No	41(9.9)
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	Yes	308(74.2)
	No	107(25.8)
There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	Yes	208(50.1)
	No	207(49.9)
Elderly pt and Patients with underlying chronic diseases are at a higher risk of severe infection and death	Yes	308(74.2)
	No	107(25.8)
Eating or contacting wild animals would result in the infection by the COVID-19 virus.	Yes	225(54.2)
	No	190(45.8)
Persons with COVID-2019 cannot infect the virus to others when a fever is not present.	Yes	201(48.4)
	No	214(51.6)
COVID-19 is transmitted by close contact and via respiratory droplets with the infected person	Yes	316(76.2)
	No	99(23.8)
Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.	Yes	204(49.2)
	No	211(50.8)
Children and young adults don't need to take measures to prevent the infection by the COVID-19 virus.	Yes	215(51.8)
	No	200(48.2)
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations.	Yes	205 (49.)
	No	210 (50.6)
Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus.	Yes	198(47.7)
	No	217(52.3)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days.	Yes	210(50.6)
	No	205(49.4)
Knowledge		307(74)
	Good	
		108 (26.)
	Poor	
Mean knowledge (9.9±4.6 SD) with a range of 1 to 16		

Practice toward COVID–19

The infection prevention practices towards the COVID–19 was measured by fourteen questions using five criteria and by proving numerical value (1 = never, 2 = occasionally, 3 = sometimes, 4 = most of the time and 5 = always) (Table 2)

Table 2: Infection prevention practice of nurses toward the COVID-19 during the COVID-19 outbreaks in Northern Ethiopia, 2020

Questions	Never (Frequency (%))	Occasionally (Frequency (%))	Sometimes (Frequency (%))	Most of the time (Frequency (%))	Always (Frequency (%))
Have you gone to any crowded place?	40(9.6)	55(13.3)	240(57.8)	20(4.8)	60(14.5)
Have you worn a mask when leaving home?	325(78.3)	14(3.4)	25(6)	26(6.3)	25(6)
Always remove protective equipment carefully?	11(2.6)	87(20.9)	46(11.1)	86(20.7)	185(44.6)
Do you cover mouth when coughing and sneezing in the past 14 days?	15(3.6)	77(21)	51(12.3)	87(21)	185(44.6)
Do you avoid public transportation in the past 14 days?	77(21)	182(43.9)	86(20.7)	55(13.3)	15(3.6)
Do you wash hands with soap and water in the past 14 days?	21(5.1)	71(17.1)	42(10.1)	83(20)	198(7.7)
Do you wash hands immediately after coughing, rubbing the nose, or sneezing in the past 14 days?	177(42.6)	87(20.9)	82(19.7)	55(13.3)	14(3.4)
Do you wear a mask regardless of the presence or absence of symptoms in the past 14 days?	41(9.9)	97(23.4)	52(12.5)	182(43.9)	43(10.4)
Do you wash hands after touching contaminated objects in the past 14 days?	11(2.6)	42(10.1)	86(20.7)	84(20.2)	192(46.3)
Do you avoid using the elevator in the past 14 days?	0	0	0	0	415(100)
Do you sit in one row while having a meal in the past 14 days?	40(9.6)	50(12)	245(59)	18(4.3)	62(14.9)
Do you avoid meeting with more than 10 people in the past 14 days?	21(5.1)	87(21)	42(10.1)	83(20)	182(43.9)
Do you feel that too worry or anxiety has been made about COVID-19?	11(2.6)	87(20.9)	46(11.1)	86(20.7)	185(44.6)
Do you stay at home to avoid COVID-19 than a normal situation(Family Quarantine)?	21(5.1)	87(21)	42(10.1)	83(20)	182(43.9)
Practice	Good	278(67)			
	Poor	137(33)			
Mean of practice (42.9±12.5 SD) with a range of 17 to 68					

Nurses attitude and psychological response toward COVID-19

The nurses' attitude towards the COVID-19 has measured eleven questions using five criteria and by proving numerical value (1 = Strong dis-agree, 2 = Dis-agree, 3 = Neutral, 4 = Agree, and 5 = Strong agree) (Table 3).

The psychological response towards the COVID-19 was measured nine questions using four criteria and by providing numerical value (1 = : Not disturbed at all, 2 = for a few days disturbance, 3 = Disturbed for more than 7 days, 4 = Almost daily disturbance) (Table 3).

Table 3: Attitude and Psychological response of nurses toward the COVID-19 during the COVID-19 outbreaks in Northern Ethiopia, 2020

statements regarding the attitude	Strong disagree	Disagree	Neutral	Agree	Strong agree
you agree that COVID-19 will finally be successfully controlled?	15(3.6)	68(16.4)	62(14.9)	169(40.7)	101(24.3)
you have confidence that Ethiopia can win the battle against the COVID-19 virus?	20(4.8)	67(16.1)	60(14.5)	168(40.5)	100(24.1)
do you think you will probably get the illness	25(4.8)	66(16.1)	59(14.5)	167(40.5)	98(24.1)
are you and your family members worried one of you will get an infection	21(5)	60(14.5)	63(15.2)	169(40.7)	102(24.5)
if you are having COVID-19, you will accept isolation in health facilities	9(2.2)	60(14.5)	60(14.5)	178(42.9)	108(26)
transmission of COVID-19 can be prevented by washing hands with soap frequently	15(3.6)	68(16.4)	62(14.9)	169(40.7)	101(24.3)
prevalence of COVID-19 can be reduced by the use of personal protective equipment (PPE) by the participant of HCWs in hospital infection control programs	9(2.2)	60(14.5)	60(14.5)	178(42.9)	108(26)
if a COVID-19 vaccine was available, I would use it	20(4.8)	67(16.1)	60(14.5)	168(40.5)	100(24.1)
COVID-19 patients should be kept in isolation	25(4.8)	66(16.1)	59(14.5)	167(40.5)	98(24.1)
healthcare workers should disclose their exposure	8(4.8)	60(14.5)	68(16.4)	173(41.7)	105(25.1)
healthcare workers are ready to participate in anti-epidemic activities in the community	21(5)	60(14.5)	63(15.2)	169(40.7)	102(24.5)
Overall Attitude	Favorable 299(72%)				
	Unfavorable 116(28%)				
Mean of attitude score (33.8±11.6 SD) with a range from 2 to 55					
statements regarding psychological response	Not disturbed	For a few days disturbance	Disturbed for more than 7 days	Almost daily disturbance	
do you have no interest or pleasure in doing work or leisure activities	30(7.2)	181(43.6)	182(43.8)	22(5.3)	
do you feel depressed and hopeless/ Level of fear of COVID-19	25(6)	184(44.3)	183(44.1)	23(5.5)	
do you find it difficult to fall asleep or keep sleeping because you were kept too much suddenly	35(8.4)	185(44.6)	173(41.7)	22(5.3)	
do you feel tired or had little energy/ Feelings of fatigue after the outbreak	40(9.6)	171(41.2)	178(42.9)	26(6.3)	
do you find it difficult to have no appetite or overeat	54(13)	168(40.5)	175(42.2)	18(4.3)	
do you feel that I have no confidence. / I felt like I am alone and let myself or my family members down/ Confidence in defeating the virus	67(16.14)	164(39.5)	172(41.4)	12(2.9)	
do you find it difficult to concentrate on such things as reading newspapers or watching television	73(17.6)	151(36.4)	182(43.8)	11(2.6)	
do you find it difficult when someone was watching me, I felt like I was speaking or talking slowly. On the contrary, It was more active than usual, too restless or agitated	44(10.6)	174(41.9)	179(43.1)	18(4.3)	

ought that it is better to die or that I would n myself anyway	61(14.7)	161(38.8)	172(41.4)	21(5.1)
hological Disturbed	354(85.3)			
onse Undisturbed	61(14.7)			
an of Psychological response	(18.3±5.1 SD)			
a range of	9 to 36			

Discussion

This study was tried to assess the knowledge, attitude, practice, and psychological response toward the COVID-19 outbreaks among nurses. In this study, the socio-demographic, knowledge level, attitude, infection prevention practical level, and psychological response of 415 nurses were analyzed.

From the 415 nurses 307(74%), 278(67%), 299(72%%), and 354(85.3%) were had good knowledge, good infection prevention practice, a favorable attitude, and disturbing psychological response towards COVID-19 respectively.

In this study, 74% (with CI; 70 to 78.1) of the participants had good knowledge regarding the COVID-19 outbreaks. This is higher than with the study conducted in Iran[14, 17] and Saudi Arabia[18]. This might be due to the time of the study and study population difference.

Our study findings regarding the knowledge level of nurses towards the COVID-19 was is consistent with the study conducted in Pakistan[19].

Among the nursrs 67% (CI; 62 to 71.8) had good infection prevention practice towards the COVID-19.

Our finding showed 72% (CI,67.8 to 76.4) of the study participants had favorable attitude towards the COVID-19. This findings is in line with the study conducted in China and Iran[12, 14] and SaudiArabia[18].

In our finding, 85.3% (CI, 82.2 to 88.7)of the nurses had disturbed psychological responses towards the COVID-19. This result is similar to the study conducted in Singapore[20] and China[21] And, this study lower than with a study conducted in Hong Kong [22]. This might be due to the same characteristics of the infection since this is respiratory distress disease.

Conclusion

Nurses had nearly three-fourth good knowledge and favorable attitude regarding COVID-19. More than two-thirds of the nurses had good infection prevention practices towards COVID-19. Nurses had an almost disturbed psychological response to COVID-19.WHO and the Ministry of Health still must provide more information for better control of the infectious disease.

Limitations

The data presented in this study are self-reported and partly dependent on the participants' honesty and recall ability; thus, they may be subject to recall bias.

Abbreviations

COVID-19: Corona Virus Disease in 2019, WHO: World Health Organization, KAP: Knowledge Attitude and Practice

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the College of Health Sciences, Aksum University. Written consent was obtained from the respondents. Confidentiality was assured for all the information provided, no personal identifiers were used on the questionnaire.

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analyses during the current study are presented within the manuscript and available from the corresponding author on reasonable request

Authors' contributions

DBT conceived and designed the initial study. All authors contributed to the conceptualization and design of the study. DBT, GTG and GTD drafted the initial manuscript. All authors contributed to the development

of the selection criteria, the risk of a bias assessment strategy, and data extraction criteria. DBT is the guarantor of the review. All authors read, provided feedback, and approved the final manuscript before submission.

Acknowledgment

Authors thanks to all staffs of Aksum University, College of Health Science and Comprehensive Specialized Hospital, data collectors and supervisors who had a dedicated output

References

1. Ho CS, Chee CY, Ho RC. *Mental Health Strategies to Combat the Psychological Impact of COVID-19 Beyond Paranoia and Panic*. *Ann Acad Med Singapore*. 2020;49(3):1–3.
2. Schoeman, D. and B.C. Fielding, *Coronavirus envelope protein: current knowledge*. *Virology journal*, 2019. **16**(1): p. 69.
3. Sohrabi, C., et al., *World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19)*. *International Journal of Surgery*, 2020.
4. Mizumoto, K., et al., *Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020*. *Eurosurveillance*, 2020. **25**(10): p. 2000180.
5. Jiang, S., et al., *A distinct name is needed for the new coronavirus*. *The Lancet*, 2020. **395**(10228): p. 949.
6. World Health Organization. *Coronavirus disease (COVID-19) Pandemic*, Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> [Accessed April 14 2020]. .
7. Wu Z, McGoogan JM. *Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention [published online ahead of print, 2020 Feb 24]*. *JAMA*. 2020;10.1001/jama.2020.2648. doi:10.1001/jama.2020.2648.
8. McEachan R, Taylor N, Harrison R, Lawton R, Gardner P, Conner M. *Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors*. *Ann Behav Med*. 2016;50(4):592–612. doi:10.1007/s12160-016-9798-4.
9. Tang L, Bie B, Park SE, Zhi D. *Social media and outbreaks of emerging infectious diseases: A systematic review of literature*. *Am J Infect Control*. 2018;46(9):962–972. doi:10.1016/j.ajic.2018.02.010.
10. Nemati, M., B. Ebrahimi, and F. Nemati, *Assessment of Iranian Nurses' Knowledge and Anxiety Toward COVID-19 During the Current Outbreak in Iran*. *Archives of Clinical Infectious Diseases*, (In Press).

11. Giao, H., et al., *Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City*. Asian Pacific Journal of Tropical Medicine, 2020: p. 13.
12. Huynh, G. and T.N.H. Nguyen, *Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City*. 2020.
13. Zhou, M., et al., *Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan, China*. Journal of Hospital Infection, 2020.
14. Bhagavathula, A.S., et al., *Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey on Healthcare workers*. medRxiv, 2020.
15. Zhong, B.-L., 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*. International Journal of Biological Sciences, 2020. **16**(10): p. 1745.
16. *COVID-19 Basic information survey and psychological response analysis(Ethiopia)*
<https://docs.google.com/forms/d/e/1FAIpQLSescY0MQWQqT-5vnMgmh4UnAbgRgBQcALn52YTQbeqyyorlQA/> (Accessed on 12 April 2020).
17. Nemati, M., B. Ebrahimi, and F. Nemati, *Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran*. Archives of Clinical Infectious Diseases, 2020. **15**(COVID-19).
18. Asaad, A.M., et al., *Knowledge and attitudes towards Middle East respiratory syndrome-coronavirus (MERS-CoV) among health care workers in south-western Saudi Arabia*. East Mediterr Health J, 2019. **25**.
19. Khan, S., et al., *Is Pakistan prepared for the COVID-19 epidemic? A questionnaire-based survey*. Journal of Medical Virology, 2020.
20. Phua, D., H. Tang, and K. Tham, *Coping responses of emergency physicians and nurses to the 2003 severe acute respiratory syndrome outbreak*. Academic emergency medicine, 2005. **12**(4): p. 322-328.
21. Lung FW, Lu YC, Chang YY, Shu BC. *Mental Symptoms in Different Health Professionals During the SARS Attack: A Follow-up Study*. *Psychiatr Q*. 2009;80(2):107–116. doi:10.1007/s11126-009-9095-5.
22. Kwok, K.O., et al., *Community responses during the early phase of the COVID-19 epidemic in Hong Kong: risk perception, information exposure and preventive measures*. medRxiv, 2020.