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Knowledge, attitude, and practice of health professionals in Ethiopia toward COVID-19 prevention at early phase

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Abstract

Introduction: Coronavirus disease (COVID-19) is a potentially lethal disease having significant public health concerns. As the disease is new, nothing has been intervened yet. Therefore, here we show the health worker's knowledge, attitude, and practice toward COVID-19.

Methods: The online cross-sectional study design was conducted from April to May 2020, among Ethiopia health workers. The data were collected online, downloaded by an Excel sheet, and transferred to IBM SPSS version 24. Using questionnaire containing four parts sociodemographic, knowledge, attitude, and practice assessing. Linear logistic regression and binary logistic regression were performed to test the association between the dependent and the independent variables. We reported the 95% confidence intervals of adjusted odds ratios with a statistical significance level at less than 0.05 *p*-values.

Results and conclusion: A total of 441 health workers were included in this study. The majority of participants were from urban (88.7%), nurses (53.1%), male (88.4%), and have a degree educational level (66.7%). The mean knowledge level of respondents was 10.13 ± 0.057 standard deviation. The majority of respondents had a positive attitude toward control of COVID-19, 88%, and 77% of respondents had confidence that Ethiopia will control COVID-19. Similarly, male (2.746, 95% confidence interval (1.23, 6.02)) and good knowledge level (1.98, 95% confidence interval (1.01, 3.09)) were found to be a determinant for attitude regarding control of COVID-19. Good knowledge level 1.6 (1.02, 2.6), male sex 2.2 (1.07, 4.6), masters 2.33 (1.06, 5.08), and medical doctors 5.99 (1.76, 20.4) to practice wearing a mask when going out of the home. Knowledge, attitude, and practice of the participant health workers are considerable, but may not be enough to control the disease. Sex, age, and profession of the health workers were determinant factors for knowledge about COVID-19. Therefore, training has to be considered for updating health care workers on COVID-19 prevention and controlled at the national level.

Keywords

Knowledge, attitude, practice, Ethiopia, health professionals

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Introduction

Coronavirus disease (COVID-19) is a potentially lethal disease, which is of great public health concern. It is a new disease of human beings that is caused by a coronavirus, different from other viruses cause severe acute respiratory syndrome (SARS), middle east respiratory (MERS), and influenza.[1,2] It was first reported in Wuhan city of China at the end of December 2019. On 30 January 2020, World Health Organization (WHO) announced that the COVID-19 outbreak could cause a Public Health Emergency of International Concern. Then, by 11 March 2020, WHO

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described the COVID-19 as a pandemic.[2,3] While more than three million cases of COVID-19 were reported, it killed over 200,000 lives until 1 May 2020.[4]

Although African countries report a low number of cases, the third wave of the pandemic may occur in the continent.[4] Before the spread of disease to different parts of the world, no country is prepared for this highly contagious disease. This has created an unprecedented strain on healthcare providers and the overall health care systems.[5]

Due to its rapid transmission, COVID-19 has caused severe challenges both to patients and health workers stationed at the outbreak's epi-center.[5] It is also infecting health workers on the frontline in fighting the diseases.[6,7] WHO reported that coronavirus has infected about 22,000 health workers as of 18 April 2020.[7] To avert such infection among health workers, equipping health workers with good knowledge and practice is mandatory.[8]

Ethiopia is one of the countries with a low health worker-to-population ratio.[9] Evidence indicates less competent health professionals in professional practice, and it is high among fresh graduates.[9] Factors associated with the knowledge, attitude, and practice of health workers could be at an individual or social level.[10,11] So far, no study has assessed the knowledge, attitude, and practice of health workers toward COVID-19 in Ethiopia. Therefore, this study was designed to identify health workers' knowledge, attitude, and practice on COVID-19 to inform policy-makers and decision-makers to design training for health workers on the disease symptoms, preventions, and treatments to prevent further spread of infection in Ethiopia.

Methods

Study setting, study design, and population

The study was conducted in Ethiopia through online survey among health professionals.

The online cross-sectional study design was conducted in Ethiopia to assess health workers' knowledge, attitude, and practice through an online-created survey from 27 April to 3 May 2020. Health professionals of all types were involved in the study. From academic/teaching institution, primary/district hospital, general hospital, health center, Ministry of Health (MOH), non-governmental organization (NGO), private clinic, referral hospital, teaching hospital, Woreda Health Office, Zonal Health Department, and specialized hospital were included (Supplementary 1 and 2).

Inclusion criteria

Inclusion criteria include all health professionals of any category.

Exclusion criteria. We excluded responses with incomplete information.

Sample size determination

Single population proportion formula was used by considering 50% of proportion, as there is no previous similar study at data collection time

$$n = \frac{\left(\frac{Za}{2}\right)^2 P\left(1-P\right)}{d^2} = \frac{(1.96)^2\, 0.50(1-0.50)}{(0.05)^2} = 384$$

Therefore, $n = 384$.

After adding 15% non-response rate as study is through online which might have maximum non-response rate it gives 442.

Data collection tool

We adapted and used a validated tool that was conducted in China.[12] It consists of four parts, Part I—sociodemographic variables (8), Part II knowledge 12 items Part III attitude (2), and Part IV practice (2).

Data were collected through an online survey questionnaire that was created on Google forms. The study participants were invited to respond to the survey questions through emails and social media (Facebook and Telegram). The questionnaire, which was created as online forms shared for the online participants, has three sections: the first page contains the study's objective, an information sheet for study participants, and consent forms.

The demographic variables included age, gender, marital status, education, occupation, and current residence place. Knowledge has been assessed by 12 questions that were focused on health worker's knowledge of clinical manifestations, ways of transmission, and prevention and control of COVID-19. Some of those questions had dichotomous responses while some had additional "I don't know" responses.

Study variables and outcome measurement

Outcome variable consists of the knowledge, attitude, and practice of health workers on COVID-19.

Knowledge. We measured the knowledge of health workers using 12 items: four questions related to clinical presentations (K1–K4), three assessing routes of transmission (K5–K7), and five for identifying prevention and control (K8–K12) of COVID-19.

The tools are assessed with an option of true/false basis with an additional "I don't know" option. A correct answer was coded as "1" point, and incorrect or unknown responses were given "0" points. The mean knowledge score of health workers toward COVID-19 was 10.13 (standard deviation (SD) = 0.057 and range = 7–12). The proportion of knowledge

score was categorized for below and above mean. Respondents obtaining a knowledge score above the mean of 10.13 were judged as having good knowledge.

Knowledge measurement question items contain three options (True, False, and I don't know). All the twelve questions were given correct and wrong responses.

Attitude. Two questions assessed the health worker's attitude: agreement on the absolute managing of COVID-19 and the confidence in overcoming the battle against COVID-19.

Practice. Health workers' practice was evaluated by asking for went to an overcrowded area and wearing a mask when going out in recent days.[12]

The independent variables were sociodemographic characteristics of the study participants, their work experience, and their living place. Sociodemographic includes gender, age, marital status, education status, working of practice, profession, place of current residence, and town residing in currently.

Data analysis

Online collected data were downloaded by an Excel sheet and transferred to IBM SPSS version 24 for analysis. The level of knowledge was computed from 12 questions. A correct answer was assigned 1 point while an incorrect answer was given zero. The total knowledge score was ranged from 0 to 12, with the highest score denoting better knowledge of COVID-19. Then, the mean score of knowledge level was computed.

Associations between the overall knowledge scores and the collected sample covariates were examined by analysis of variance (ANOVA) and independent *t*-test. Factors related to the knowledge level of workers were identified by linear regression analysis. Then, we fitted the multivariable linear regression model to assess the association of explanatory variables and knowledge scores. The regression coefficient was calculated for all variables included in the analysis.

Then, binary logistic regression analysis was employed to identify factors associated with health workers' practice and attitude. Odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated to show the association's strength and direction. All associations were considered statistically within the final models significant at $p < 0.05$.

Ethical considerations

Wollega University's research ethics review committee (WUREC) approved the study. The objective of the study was explained through an online written form. After consented to participate through the online consent form, the participants were involved in the study by agreeing on the online consent form before continuing to fill the online tools. Personal identifiers were not included in the form to keep the confidentiality of the questions.

Results

A total of 441 study participants have entirely responded to the study of online questions. Most of the respondents were male in sex 390 (88.4%). More than half of the study, respondents were between the age group 25–29 years 243 (55.1%), and most of the respondents were urban residents 391 (88.7%) (Table 1).

Knowledge regarding COVID-19, mean knowledge score, level of knowledge, and associated factors of study participant

The correct answer rates of the 12 questions on the COVID-19 knowledge questionnaire were 36.7%–98.2% (Table 2). The mean knowledge score of health workers toward COVID-19 was 10.13 (SD = 0.057 and range = 7–12). The proportion of knowledge score was categorized for below and above mean. Accordingly, 59.5% of respondents had poor knowledge of COVID-19.

The mean knowledge score of sex ($p < 0.0008$), profession ($p = 0.0223$), and age groups ($p = 0.0374$) were significantly associated with the knowledge score of health professionals (Table 3).

Attitude toward and factors associated with an attitude of health workers toward COVID-19

The majority of the respondents agreed that COVID-19 would finally be successfully controlled 388 (88%). The majority of participants 340 (77.1%) have confidence that Ethiopia will mitigate COVID-19 (Table 4). The attitude toward preventing COVID-19 and the belief to control it differ across sex, marital status, current residence status, educational status, age group, and profession of the respondents (Table 5). Based on multivariate analysis, males and respondents with good knowledge levels are more likely to have a positive attitude toward controlling coronavirus spread (Table 6).

Factors associated with knowledge of health workers about COVID-19 prevention

Linear regression was fitted to identify factors associated with the knowledge of health workers toward COVID-19 prevention. Based on this, the male has a 0.6 increased mean knowledge level compared to female respondents. Furthermore, pharmacists have lower knowledge scores compared with medical doctors. Other variables included in the analysis do not show a statically significant association (Table 7).

Table 1. Sociodemographic characteristics of health professionals participated knowledge, attitudes, and practice toward COVID-19 in Ethiopia, 2020.

		Frequency	%
Gender	Male	390	88.4
	Female	51	11.6
	Total	441	100.0
Place of residency	Urban	391	88.7
	Rural	50	11.3
	Total	441	100.0
Marital status	Married	256	58.0
	Never married	185	42.0
	Total	441	100.0
Educational status	Degree	294	66.7
	Diploma	31	7.0
	Masters	97	22.0
	Medical doctor	19	4.3
	Total	441	100.0
Professionals	Medical doctor	19	4.3
	Medical laboratory	14	3.2
	Midwifery	61	13.8
	Nurse	234	53.1
	Pharmacy	26	5.9
	Public health	87	19.7
	Total	441	100.0
Age group	20–24	31	7.0
	25–29	243	55.1
	30–34	132	29.9
	>35	35	7.9
	Total	441	100.0
Current area of work	Academic/teaching	96	21.8
	District hospital	62	14.1
	General hospital	74	16.8
	Health center	111	25.2
	MOH	7	1.6
	NGO	17	3.9
	Private clinic	7	1.6
	Referral hospital	24	5.4
	Teaching hospital	14	3.2
	Woreda Health Office	9	2.0
	Zonal Health Department	7	1.6
	Specialized hospital	13	2.9
	Total	441	100.0

MOH: Ministry of Health; NGO: non-governmental organization.

Factor associated with the practice toward COVID-19

This study identified that 161 (36.5%) of health workers have gone to crowded places in recent days. On another way, it was found that 62.1% of health workers have never worn a mask when leaving home. Knowledge level, sex, educational status, and attitude toward global control of COVID-19 were significantly associated with the practice of COVID-19 prevention (Table 8).

Discussion

We identified that knowledge considerable respondents have a score below the mean, while the majority of respondents have a positive attitude toward control success, mitigation of COVID-19 in Ethiopia and the majority have reduced practice level for prevention of pandemic. About two-thirds of health workers had confidence toward control of COVID-19.

The outbreak is now a global pandemic and which become the reason for many life losses.[13] Since it is a new disease to a

Table 2. Items used to measure knowledge level of health professionals in Ethiopia toward COVID-19, 2020.

Serial number	Items	% of correct answer
1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	97.1%
2	Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus	36.7%
3	There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection	95.7%
4	Not all persons with COVID-2019 will develop to severe cases. Only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases	86.2%
5	Eating or contacting wild animals would result in the infection by the COVID-19 virus	76.4%
6	Persons with COVID-2019 cannot infect the virus to others when a fever is not present	88.7%
7	The COVID-19 virus spreads via respiratory droplets of infected individuals	98.2%
8	Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus	45.8%
9	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	92.1%
10	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations	96.4%
11	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	98.2%
12	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	97.7%

Table 3. Knowledge level by background characteristics of health workers in Ethiopia.

Variables		Mean knowledge level		*p*-value
Gender	Male	10.2	1.158	0.0008*
	Female	9.6	1.355	
Marital status	Married	10.11	1.23	0.7113
	Never married	10.15	1.08	
Current place of residence	Urban	10.12	1.19	0.5842
	Rural	10.22	1.23	
Educational status	Degree	10.3	1.22	0.888
	Diploma	10	1.39	
	Masters	10.2	1.12	
	Medical doctor	10.1	1.13	
Age group	20–24	10.1	1.04	0.0374*
	25–29	10.21	1.12	
	30–34	9.9	1.27	
	>35	10.45	1.4	
Profession	Medical doctor	10.05	1.12	0.0223*
	Medical laboratory	10.64	0.6	
	Midwifery	9.9	1.2	
	Nurse	10.14	1.24	
	Pharmacy	9.57	1.13	
	Public health	10.34	1.06	

*Signifies associated variable.

human being, health professionals still may not know about the disease yet. Health workers are also at higher risk during the outbreak, especially respiratory system disease.[14] This the fact that factors like health professional's poor knowledge possibly contribute to the rapidly increasing number of infected health workers during an outbreak if it is not identified yet.[15] The COVID-19 attack is considered Public Health Emergency, and health professionals are underpinned to have an increased risk of infection.[15,16]

The mean knowledge level of health professionals is 10.13 (95% CI 10.02, 10.24). This finding is relatively similar to the knowledge level of health workers in China.[16] Besides this,

Table 4. Independent *t*-test to test covarieties of knowledge across sex, marital status, and place of residence.

Group	Observed	Mean	Standard error	Standard deviation	95% confidence interval
Married	256	10.05859	0.0855813	1.369301	9.890058, 10.22713
Never married	185	10.13514	0.0824888	1.121968	9.97239, 10.29788
Difference	−0.0765414	0.1188636		−0.3101642	0.1570814
Difference = mean (married) − mean (never married), t = −0.6439					
Male	390	10.16667	0.06184	1.221242	10.04508, 10.28825
Female	51	9.509804	0.2083973	1.488255	9.091226, 9.928382
	0.6568627	0.217379		0.221909	1.091816
Difference = mean (male) − mean (female), *t* = 3.0217					
Urban	391	10.07417	0.064523	1.27586	9.947312, 10.20103
Rural	50	10.22	0.174473	1.23371	9.869383, 10.57062
Difference	−0.1458312	0.1860216		−0.517546	0.2258836
Difference = mean (urban) − mean (rural), *t* = −0.7839					

Table 5. Attitudes toward COVID-19 among health workers in Ethiopia, 2020.

		Final success in controlling of COVID-19			Confidence on winning by Ethiopia	
		Agree	Disagree	I don't know	Yes	No
Gender	Male	350 (89.7%)	24 (6.2%)	16 (4.1%)	303 (77.7%)	87 (22.3%)
	Female	38 (74.5%)	10 (19.6%)	3 (5.9%)	37 (72.5%)	14 (27.5%)
Marital status	Married		229 (89.5%)	18 (7.0%)	204 (79.7%)	52 (20.3%)
	Never married		159 (85.9%)	16 (8.6%)	136 (73.5%)	49 (26.5%)
Current place of residence	Urban	343 (87.7%)	30 (7.7%)	18 (4.6%)	300 (76.7%)	91 (23.3%)
	Rural	45 (90.0%)	4 (8.0%)	1 (2.0%)	40 (80.0%)	10 (20.0%)
Educational status	Degree	258 (87.8%)	22 (7.5%)	14 (4.8%)	233 (79.3%)	61 (20.7%)
	Diploma	26 (83.9%)	4 (12.9%)	1 (3.2%)	24 (77.4%)	7 (22.6%)
	Masters	87 (89.7%)	6 (6.2%)	4 (4.1%)	71 (73.2%)	26 (26.8%)
	Medical doctor	17 (89.5%)	2 (10.5%)	0	12 (63.2%)	7 (36.8%)
Age group	20–24	26 (83.9%)	4 (12.9%)	1 (3.2%)	27 (87.1%)	4 (12.9%)
	25–29	213 (87.7%)	18 (7.4%)	12 (4.9%)	185 (76.1%)	58 (23.9%)
	30–34	116 (87.9%)	10 (7.6%)	6 (4.5%)	97 (73.5%)	35 (26.5%)
	>35	33 (94.3%)	2 (5.7%)	0	31 (88.6%)	4 (11.4%)
Profession	Medical doctor	17 (89.5%)	2 (10.5%)	0	12 (63.2%)	7 (36.8%)
	Medical laboratory	14 (100.0%)	0	0	11 (78.6%)	3 (21.4%)
	Midwifery	51 (83.6%)	6 (9.8%)	4 (6.6%)	45 (73.8%)	16 (26.2%)
	Nurse	202 (86.3%)	21 (9.0%)	11 (4.7%)	185 (79.1%)	49 (20.9%)
	Pharmacy	24 (92.3%)	0	2 (7.7%)	21 (80.8%)	5 (19.2%)
	Public health	80 (92.0%)	5 (5.7%)	2 (2.3%)	66 (75.9%)	21 (24.1%)

more than half of the health workers who participated in this study had a knowledge level less average, similar to the study conducted in Vietnam.[17]

Increased knowledge score on coronavirus in this study is because health workers are exposed to different media exposure starting from the pandemic. Various media sources had been disseminating the information, which could contribute to the observed better knowledge.[6] However, the participants' understanding was not uniform across all contents. Only two out of five individuals had a good knowledge of clinical manifestation and ways of transmission. This finding is similar to the study conducted in Bangladesh.[18] This because the disease is new, no detail about the disease was not established at the early phase of the pandemic is the main factor.

This finding indicates a need to improve the knowledge of health workers as a lack of awareness exposed health workers to the disease. Lesson from China suggests that many health workers could be affected by a coronavirus from a lack of understanding and precautionary measures for combating the COVID-19 outbreak at the beginning. Inadequate information on epidemiological transmission could also deter the application of prevention methods.[14] Thus, about 3019 health workers were infected, and 10 died because of the disease.[15]

Table 6. Factors associated with attitudes of health workers in Ethiopia, 2020.

Variables		COVID-19 can be successfully controlled		AOR (95% CI)
		Disagree	Agree	
Sex	Male	40 (10.3%)	350 (89.7%)	2.746 (1.23, 6.02)
	Female	13 (25.5%)	38 (74.5%)	1
Knowledge level	Poor knowledge	40 (15.2%)	224 (84.8%)	1
	Good knowledge	13 (7.3%)	164 (92.7%)	1.98 (1.01, 3.09)
		Confidence on winning COVID-19 by Ethiopia		
		Yes	No	AOR (95% CI)
Profession	Medical doctor	12 (63.2%)	7 (36.8%)	1
	Medical laboratory	11 (78.6%)	3 (21.4%)	5.178 (0.8, 32.5)
	Midwifery	45 (73.8%)	16 (26.2%)	4.11 (0.99, 17.1)
	Nurse	185 (79.1%)	49 (20.9%)	4.56 (1.21, 17.1)
	Pharmacy	21 (80.8%)	5 (19.2%)	9.34 (1.7, 50.2)
	Public health	66 (75.9%)	21 (24.1%)	5.2 (1.33, 20.6)
Knowledge level	Poor knowledge	193 (73.1%)	71 (26.9%)	1
	Good knowledge	147 (83.1%)	30 (16.9%)	1.65 (0.9, 2.7)

AOR: adjusted odds ratio; CI: confidence interval.

Table 7. Linear regression output for factors associated with knowledge of health workers toward COVID-19, in Ethiopia.

Knowledge level	Coefficient	*T*	*p*-value	95% confidence interval	
Sex (male vs female)	0.60	3.30	0.001	0.24	0.97
Education level (degree vs medical doctors)	0.59	1.38	0.169	−0.25	1.44
Education level (diploma vs medical doctor)	0.57	1.25	0.213	−0.33	1.49
Education level (masters vs medical doctor)	0.55	1.31	0.192	−0.279	1.38
Profession (midwife vs medical doctor)	−0.70	−1.97	0.050	−1.40	−0.00
Profession (nurse vs medical doctor)	−0.56	−1.68	0.093	−1.21	0.09
Profession (pharmacy vs medical doctor)	−1.159	−2.91	0.004	−1.92	−0.37
Profession (public health vs medical doctor)	−0.35	−1.03	0.303	−1.02	0.31
Place of residence (urban vs urban)	−0.05	−0.29	0.771	−0.42	0.31
Age in years	−0.01	−0.61	0.544	−0.042	0.02
Constant	9.90	17.65	0.000	8.80	11.01

Table 8. Multivariable logistic regression factors associated with practice of health workers in Ethiopia, 2020.

Variable		Wearing a mask when going out of home		
		No	Yes	AOR at 95% CI
Categorized knowledge	Poor knowledge	157 (59.5%)	107 (40.5%)	1
	Good knowledge	117 (66.1%)	60 (33.9%)	1.6 (1.02, 2.6)
Sex	Male	250 (64.1%)	140 (35.9%)	1
	Female	24 (47.1%)	27 (52.9%)	2.2 (1.07, 4.6)
Educational status	Degree	189 (64.3%)	105 (35.7%)	1
	Diploma	16 (51.6%)	15 (48.4%)	0.67 (0.21, 1.6)
	Masters	59 (60.8%)	38 (39.2%)	2.33 (1.06, 5.08)
	Medical doctor	10 (52.6%)	9 (47.4%)	5.99 (1.76, 20.4)
		Going to a crowded place		
		Yes	No	
Confidence on winning COVID-19 by Ethiopia	No	54 (53.5%)	47 (46.5%)	1.645 (1.05, 2.6)
	Yes	226 (66.5%)	114 (33.5%)	1

AOR: adjusted odds ratio; CI: confidence interval.

This can be applied in any country if appropriate management is not taken in a country like Ethiopia.

Poor knowledge of health workers is a concern during such pandemic. According to a study conducted in China, 85% of health workers fear that coronavirus could infect them at health facilities due to a lack of awareness about the disease.[16] Their fear can result in reduced quality of care and prevention of COVID-19.

We identified nine out of ten respondents of this study correctly mentioned the signs and symptoms of COVID-19. This finding is higher than the study from Vietnam, in which only 72.8% of health professionals respond to correct signs and symptoms of COVID.[17] It is consistent with another study result from Bangladesh[18] and Egypt.[19] It is also higher than the study conducted the United State (79.8%) and UK (84.6%).[20] As also supported by India's study,[21] participants of this survey also indicated that isolation and treatment of persons infected with the coronavirus are essential for prevention and control mechanisms.

Male participants have better knowledge scores when compared with female participants. This finding cannot be conclusive because their comparison groups were small in number; however, it is consistent with study result from Nepal.[22] It is different from South Korea, in which females were good in knowledge.[23] Besides, pharmacists had lower knowledge scores compared with medical doctors. The insufficient knowledge of pharmacists indicates a need to train health professionals focusing on COVID-19. This finding is similar to the study finding of Vietnam.[17] This is because the disease is new, and there was new drug for the treatment on which pharmacist may read it.

A higher proportion of study participants had a positive attitude regarding final success in the control of COVID-19 as also participants in the Vietnamese study believed.[17] While a small number of the case has detected in Ethiopia, it may be not easy to measure the attitude at the level. Because the attitude may change with an increased number of patients in the country. This finding is also consistent with a study conducted in Nepal[22] and China.[24] This finding gives decision-makers confidence in controlling the pandemic's effects because health workers had a favorable attitude on managing COVID-19.

Going to a crowded area is one of the risk factors for coronavirus transmission. In this study, about one-third of the study participants have gone to overcrowded areas. As health professionals are also part of the community that goes to the high-risk program, it will double the risk. Health professionals are also at high risk because of working in the clinical area where they may contract the virus.[22] This is because they will have close contact with the disease through infected personal at a nearby distance.

Limitation of the study

Considering the limitation of an online survey platform is indispensable while accepting the findings of this study. Online platforms might not be accessible to health professionals, especially those working, because of inadequate access to Internet service in rural areas. However, most healthcare providers visit districts found near while they are duty-free, making us get those working in rural parts of the country. As the study design was cross-sectional, it might not assess the cause and effect at the same time that may be lead us to use the appropriate design for the identified gap. As well, the tool was not pre-tested in country's contexts even if it was used in other countries.

Conclusion

Health workers have considerable knowledge scores toward COVID-19 symptoms, practices, and prevention methods. However, female health workers and pharmacists had a statistically significantly lower level of knowledge score. The majority of respondents have a positive attitude toward control success and mitigation of COVID-19 in Ethiopia. It is not adequate with the pandemics of the disease. Decision-makers and program managers could facilitate intervention packages like training health workers on COVID-19 at an early stage to mitigate the devastating effect of the virus on health workers and the community as large.

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Author contributions

G.F. and B.E. have developed the proposal, participated in data collection supervision, and data analysis. G.F., B.E., T.T., M.G., T.T.B., B.W., G.F., A.M., and W.E. have participated in the manuscript writing. All authors read and approved the final manuscript.

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Supplemental material

Supplemental material for this article is available online.

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