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ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDES, AND PRACTICES TOWARDS CORONAVIRUS DISEASE -19 AMONG HEALTH PROFESSIONALS IN ADDIS ABABA

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ABSTRACT

Introdution: *COVID-19 is an acute respiratory illness caused by a novel human coronavirus (SARS-CoV-2, called COVID-19 virus), which causes higher mortality in people aged ≥60 years and in people with underlying medical conditions. It is also announced as global concern of pandemic disease (WHO).*

Objective: *To describe the Knowledge, attitudes, and practices towards COVID-19 among health professionals in four selected hospitals, Addis Ababa, Ethiopia.*

Methods*: A cross-sectional survey was conducted on 526 health professionals aged from 20-50^{+} years old from April to May 2020. A standardized, well-structured questionnaire was used for randomly selected health professionals in four government hospitals in Addis Ababa. Data were analyzed using Statistical Package for Social Sciences software (SPSS) (version 23.0). Descriptive statistics were used to summarize the study and outcome variables. Chi-square test was used to test the differences and odds ratios were used for observing and quantifying the association between categorical outcomes. The 95% confidence intervals were calculated for odds ratio. The p value ≤ 0.05 was considered significant.*

Results: *A total of 526 health professionals participated in the study. 227(43.2 %) from Tikur Anbesa Hospital, 110 (20.9 %) from Yekatit 12 Hospital, 87 (16.5 %), and 102 (19.4 %) from Ghandi and Zewditu Memorial Hospitals respectively. 283 (53.8 %) were females, 311 (59.8%) age 20 - 30, the mean age was 32.5 with Standard deviation (8.9). 204 (38.8 %) physicians and 82 (15.6 %) were nurses. Age groups > 50 years were more knowledgeable than the reference age group 20-30 years AOR= 8.76 with 95% CI (2.47-30.99).*

Conclusion*: The study identified that there was a huge knowledge gap on the asymptomatic transmission of the disease and the need of child protection.*

Key words*: Knowledge, Attitude, practice, health professionals and COVID-19.*

INTRODUCTION

Coronavirus - 2019 (abbreviated as "COVID- 19") is a Public Health Emergency of International Concern (1). Initially, most cases were reported in Wuhan City, Hubei Province, China. It is an acute respiratory illness caused by a novel human coronavirus (SARS-CoV-2, called COVID-19 virus), which causes higher mortality in people aged ≥60 years and in people with underlying medical conditions (2,3). Its main clinical symptoms include fever, dry cough, fatigue, myalgia, and Dyspnea, and develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, and bleeding and coagulation dysfunctions (4-7).

In Ethiopia the first coronavirus case was reported on 13 March 2020. 74 total cases, 14 recovers from the virus and 3 deaths were reported Since 13 April 2020 (8,9).

Different measures were taken by the Government of Ethiopia to reduce the spread of the virus such as suspending schools, sporting events, public gatherings, suspending flights, closing of night clubs and closing all land borders (10 -14).

These also applied by the regional governments. The disease has very great impact on world's economy. It is estimated that COVID-19 will shave 2.9 percentage points off this fiscal year's economic growth in Ethiopia. Therefore, collaborative efforts of all countries to prevent the rapid spread is mandatory (15-17). knowledge and attitudes towards infectious diseases are associated with level of anxiety among health professionals and the public at all hence complicate prevention.

Thus, adherence to the practice of control measures are indispensable (18,19). Study showed a positive attitude among physicians, pharmacist, nurses and technicians was great but with average practices. The level of concern and precaution are significantly associated with knowledge.

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Factors such as age and profession were associated with inadequate knowledge and poor perception of COVID-19 (20).
Understanding the health professionals' perceptions towards COVID-19 is an imperative requisite. Therefore, study is intended to identify the knowledge, attitude and practice gaps between the health professionals and provide recommendation for the government and ministry of health and other responsible bodies.

MATERIALS AND METHODS

A cross-sectional survey was conducted on 526 health professionals aged from twenty to above fifty years old in period from April to May 2020. Sample size was calculated with 95% confidence interval, 0.04 margin of error and 72% the proportion of targeted population who expected fair knowledge according to the study done in Saudi Arabia (21) and 10% non-respondent rate was added, the sample size was 532(6 professionals declined from interview due to lack of willingness).

A standardized, well-structured questionnaire was used for randomly selected health professionals in four government hospitals in Addis Ababa. Only health professionals working in the selected hospitals were included in the study. The questionnaire was designed in English and then translated to Amharic and reviewed for consistency. The questionnaire included socio-demographic characteristics of the participants, questions related to knowledge about Coronavirus, and followed by questions related to attitude and practice toward COVID-19.

The recorded data were analyzed using Statistical Package for Social Sciences software (SPSS) version 23.0. Descriptive statistics frequency with percentage and cross tab were used to summarize the study and outcome variables. Pearson's Chi-square test was used to test the differences and odds ratios were used for observing and quantifying the association between categorical outcomes. 95% confidence intervals were calculated for odds ratios. P -value < 0.05 was considered significant.

Operational Definitions

The knowledge part consists of 12 questions and the score 1 for the correct answer, 0 for No and for I don't know. The highest score was 12 and the lowest was 0. The cut off point for the 'good knowledge' was the mean scores and above and 'poor knowledge' was below the mean score which was 10.5.

Attitudes towards COVID-19 was measured by 2 questions about the agreement on the final control of COVID-19 and the confidence in winning the battle against COVID-19. The assessment of respondents' practices was composed of 3 behaviors of Frequent hand washing, going to a crowded place and wearing a mask when going out in recent days.

RESULTS

A total of 526 health professionals participated in the study with 98.8 response rate. 227(43.2 %) from Tikur Anbesa Hospital, 110 (20.9 %) from Yekatit 12 Hospital 87 (16.5 %), and 102 (19.4 %) from Ghandi and Zewditu Memorial Hospitals respectively. Among these, 283 (53.8 %) were females, 311 (59.8%) with age group between 20 - 30, the mean age was 32.5 with Standard deviation (8.9). 204 (38.8 %) were physicians and 82 (15.6 %) were nurses.

Most of the knowledge questions towards covid-19 was scored above 87.1%.where as questions about asymptomatic transmission and the need of prevention of child from covid-19 scores 59.7 and 56.5 respectively. 523 (99.4%) of the respondents Knew the main clinical symptoms of covid-19 (Figure- 1).

Figure 1: Knowledge of health professionals about COVID-19.

Great majority of the respondents had good attitude that covid-19 will be successfully controlled 394 (74.9 %) but only 233 (44.3 %) of the respondents believed that Ethiopia can win the fight against covid-19 (Table - 2).

There are three questions to evaluate the practice of covid-19 prevention, 309 (58.7 %) had gone to crowded place in the recent days, 376 (71.5 %) worn mask when leaving home, 334 (63.5 %) practice proper hand washing technique and use hand sanitizer (Figure- 2).

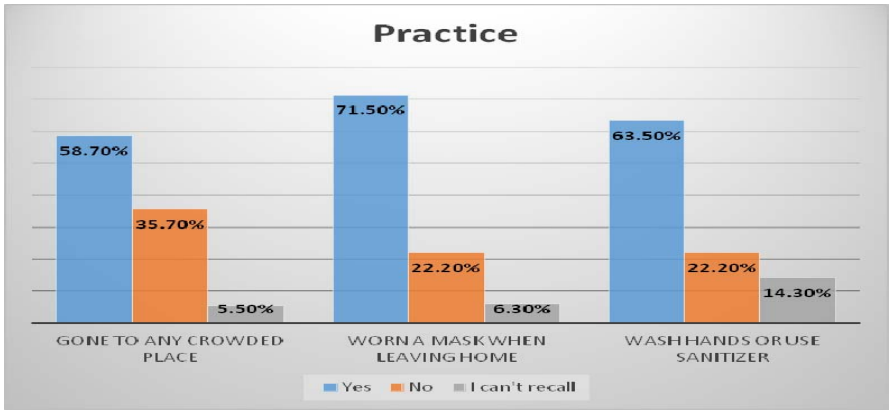

Figure 2: Practice of health professionals to prevent COVID-19.

Table 1: Association betweenCOVID-19 prevention practice and level of profession and age.

		Gone to any crowded place		Worn a mask when leaving home		Wash hands or use sanitizer	
		Yes	No	Yes	No	Yes	No
Nurses	N	42	40	59	23	65	17
	%	51.2	48.8	72.0	28.0	79.3	20.7
Medical Students	N	64	40	92	12	76	28
	%	61.5	38.5	88.5	11.5	73.1%	26.9
Physician	N	111	93	150	54	130	74
	%	54.4	45.6	73.5	26.5	63.7%	36.3%
Pharmacist	N	43	23	25	41	16	50
	%	65.2	34.8	37.9	62.1	24.2%	75.8
Laboratory Technician	N	49	21	50	20	47	23
	%	70.0	30.0	71.4	28.6	67.1%	32.9
P-value		0.071		0.000		0.000	
20-30	N	189	122	260	51	243	68
	%	60.8	39.2	83.6	16.4	78.1	21.9
31-40	N	64	48	70	42	69	43
	%	57.1	42.9	62.5	37.5	61.6	38.4
41-50	N	38	33	32	39	15	56
	%	53.5	46.5	45.1	54.9	21.1	78.9
>51	N	18	14	14	18	7	25
	%	56.2	43.8	43.8	56.2	21.9	78.1
P-value		0.676		0.000		0.000	

Nearly half of the respondents, had gone to crowded place, 92 (88.5 %) of medical students(interns),150 (73.5 %) physicians worn mask when leaving home and majority of nurses, 65 (79.3 %) and only 16 (24.2%) pharmacists perform proper hand washing techniques or use hand sanitizer.

Mask was worn by 260 (83.6%) of health professionals with the age group between 20-30 and 14 (43.8 %) of age >50 years, P-value <0.001. Wearing mask while leaving home significantly associated with age, 260 (83.6%), 20-30yeras, and 14 (43.8 %) >50 years, P-value <0.001 (Table- 1).

The practice of wearing mask while leaving home was significantly associated with level of profession, age groups and place of work with p-value <0.001 but there was no association with gender (P-value 1.000). The practices of hand washing or using sanitizer were significantly associated with level of profession and age groups with P-value <0.001, with gender and place of work with P-value 0.016 and 0.010 respectively. However, the practice of going to crowded place was not associated with p-value >0.05 (Table – 1&2).

The attitude of controlling COVID-19 associated with the level of profession with P-value 0.042 but no association with age of the health workers with P -value 0.052. the confidence of health workers in winning the fight against COVID-19 was significantly associated with level of profession (P-value 0.019) and age groups of the health workers P-value 0.005.(Table- 3).

Table 2: Association between Practice of covid-19 prevention, gender and work place

		Gone to any crowded place		Worn a mask when leaving home		Wash hands or use sanitizer	
		Yes	No	Yes	No	Yes	No
Male	N	166	117	202	81	166	117
	%	58.7	41.3	71.4	28.6	58.7	41.3
Female	N	143	100	174	69	168	75
	%	58.8	41.2	71.6	28.4	69.1	30.9
Value		1.000		1.000		0.016	
OR		1.008 (0.712-1.428)		1.011 (00.692- 1.478)		1.579 (1.101 - 2.264)	
Tikur	N	120	107	137	90	130	97
Anbesa	%	52.9	47.1	60.4	39.6	57.3	42.7
Yekatit 12	N	66	44	87	23	71	39
	%	60.0	40.0	79.1	20.9	64.5	35.5
Ghandi	N	59	28	69	18	55	32
	%	67.8	32.2	79.3	20.7	63.2	36.8
Zewditu	N	64	38	83	19	78	24
	%	62.7	37.3	81.4	18.6	76.5	23.5
P-value		0.074		0.000		0.010	

Table 3: Association between the attitudes of health workers towards COVID- 19 with socio-demographic characteristics.

	COVID-19 will be successfully controlled N (%)		Win the fight against the COVID-19 virus N (%)	
	Yes	No	Yes	No
Nurses	54 (65.9)	28 (34.1)	46 (56.1)	36 (43.9)
Medical Students	71 (68.3)	33 (31.7)	42 (40.4)	62 (59.6)
Physician	160 (78.4)	44 (21.6)	81(39.7)	123 (60.3)
Pharmacist	55 (83.3)	11 (16.7)	25 (37.9)	41 (62.1)
Laboratory Technician	54 (77.1)	16 (22.9)	39 (55.7)	31 (44.3)
P-value	0.042		0.019	
20-30	223 (71.7)	88 (28.3)	143 (46.0)	168 (54.0)
31-40	88 (78.6)	24 (21.4)	58 (51.8)	54 (48.2)
41-50	61 (85.9)	10 (14.1)	26 (36.6)	45 (63.4)
>51	22 (68.8)	10 (31.2)	6 (18.8)	26 (81.2)
P-value	0.052		0.005	
Male	223 (78.8)	60 (21.2)	126 (44.5)	157 (55.5)
Female	171 (70.4)	72 (29.6)	107 (44.0)	136 (56.0)
P-value	0.034		0.910	
Tikur Anbesa	177 (78.0)	50 (22.0)	98 (43.2)	129 (56.8)
Yekatit 12	81 (73.6)	29 (26.4)	52 (47.3)	58 (52.7)
Ghandi	68 (78.2)	19 (21.8)	44 (50.6)	43 (49.4)
Zewditu	68 (66.7)	34 (33.3)	39 (38.2)	63 (61.8)
P-value	0.144		0.331	

Variables in bivariate analysis with P-value <0.2 were computed with multivariate analysis to exclude confounding factors. Gender, going to crowded place and the attitude about disease control were excluded P-value >0.2. Elder age groups > 50 years were more knowledgeable than the reference age group 20-30 years AOR= 8.76 with 95% CI (2.47-30.99). Being Pharmacist and laboratory technicians had a good knowledge than the reference group nurses with AOR =2.72 (1.25-5.94) and =1.98 (1.00-3.94) 95% CI respectively.

Health workers who were not confident in winning the fight against COVID-19 were more knowledgeable than those who were confident with AOR= 1.64 (1.14-2.37) 95% CI. After adjusting variables for confounding factors work place, wearing mask while leaving home and washing hands or using sanitizer were not associated with knowledge (Table- 4).

Table 4: Multivariate analysis of level of knowledge of health workers with attitude, practice and socio demographic characteristics.

Characteristics		Knowledge N (%)		P-value	COR (95 % CI)	AOR (95 % CI)
		Poor	Good			
Age in year	20-30	159 (51.1)	152 (48.9)	0.000	1	1
	31-40	53 (47.3)	59 (52.7)		1.164 (0.756-1.795)	1.103 (0.677-1.796)
	41-50	24 (33.8)	47 (66.2)		2.049 (1.194-3.514)	1.464 (0.757-2.832)
	>50	3 (9.4)	29 (90.6)		10.112 (3.017-33.886)	8.760 (2.476-30.995)
Profession	Nurses	48 (58.5)	34 (41.5)	0.007	1	1
	Medical students	49 (47.1)	55 (52.9)		1.585 (0.884-2.842)	1.808 (0.948-3.449)
	Physicians	91 (44.6)	113 (55.4)		1.753 (1.043-2.945)	1.384 (0.796-2.406)
	Pharmacist	18 (27.3)	48 (72.7)		3.765 (1.874-7.562)	2.729 (1.252-5.946)
	Lab.Tech.	33 (47.1)	37 (52.9)		1.583 (0.832-3.010)	1.989 (1.004-3.941)
Work place	Tikur Anbesa	89 (39.2)	138 (60.8)	0.075	1.613 (1.007-2.582)	1.563 (0.932-2.620)
	Yekatit 12	52 (47.3)	58 (52.7)		1.160 (0.676-1.989)	1.258 (0.700-2.261)
	Ghandi	46 (52.9)	41 (47.1)		0.927 (0.523-1.643)	0.780 (0.419-1.451)
	Zewditu	52 (51.0)	50 (49.0)		1	1
Worn a mask when leaving home	No	54 (36.0)	96 (64.0)	0.006	1.722 (1.166-2.543)	1.107 (0.698-1.755)
	Yes	185 (49.2)	191 (50.8)		1	1
Wash hands or use sanitizer	No	69 (35.9)	123 (64.1)	0.001	1.848 (1.283-2.661)	1.134 (0.732-1.756)
	Yes	170 (50.9)	164 (49.1)		1	1
Win the fight against COVID-19 virus	Disagree	113 (38.6)	180 (61.4)	0.001	1.876 (1.323-2.659)	1.646 (1.140-2.379)
	Agree	126 (54.1)	107 (45.9)		1	1

DISCUSSION

Most of the respondents had good knowledge on symptoms of COVID-19 which scores above 87.1%, but the study identified that there was a gap of knowledge on asymptomatic transmission and the need of prevention of child from COVID-19 which scores 59.7% and 56.5% respectively.

The study result was relatively correlated with another study done in Saudi (61%) of HCWs had poor knowledge of its transmission (22). 523 (99.4%) of the respondents Knew the main clinical symptoms of covid-19. This is equivalent to the study in China the correct rate of the knowledge questionnaire was 90%. (3).

Different countries use their maximum efforts to control the spread of disease forexample, (98.0%) of Chinese people worn masks while leaving home (2). Study found that the practice of prevention methods was not satisfactory in contrast to others experience, 309 (58.7 %) had gone to crowded place in the recent days, only 376 (71.5 %) worn mask when leaving home and 334 (63.5 %) practice proper hand washing technique and use hand sanitizer. However, utilization of mask was relatively better than the experience of Saudi Arabia to prevent MERS face mask was used by (24.2%) in crowded place (23).

The practice of wearing mask while leaving home was significantly associated with level of profession, age groups and place of work with p-value <0.001 but there was no association with gender P-value 1.000. The practice of hand washing or using sanitizer were significantly associated with level of profession and age groups with P-value <0.001, with gender and place of work with P-value 0.016 and 0.010 respectively. However, the practice of going to crowded place according to this study was not associated with p-value >0.05. the result is so different with other study which showed that (male vs. female, OR: 1.37, P=0.019), occupation of "students" (vs. mental labor, OR: 1.54, P=0.007), and COVID-19 knowledge score (OR: 0.90, P<0.001) were significantly associated with going to any crowded place (2).

Study in Saudi Arabia about Middle East Respiratory Syndrome (MERS): showed a positive attitude among physicians (96.3%), pharmacist (94.4%), nurses (94.6%) and technicians (90.1%) with no statistically significant (p=0.273) (23). Another study showed (97.1%) had confidence that China can win the fight against COVID-19 (3). But in this study, the attitude of health workers was very poor only, 233 (44.3 %) of the health workers believed that Ethiopia can win the fight against covid-19, while 394 (74.9 %) of the respondents believed that covid-19 will be successfully controlled. This poor attitude may also relate to the countries health system capacity and this also requires further investigation.

In this study, the attitude of controlling COVID-19 associated with the level of profession with P-value 0.042 but no association with age of the health workers with P-value 0.052. the confidence of health workers in winning the fight against COVID-19 was significantly associated with level of profession P-value 0.019 and age groups of the health workers P-value 0.005. This result somehow resembles study among Chinese residents the attitude towards the final success in controlling COVID-19 significantly differed across genders, education levels, occupation categories, and residence places P<0.05.

Elder age groups > 50years were more knowledgeable than the reference age group 20-30 years AOR= 8.76 with 95% CI (2.47-30.99). Factors, such as age and profession were associated with inadequate knowledge and poor perception of COVID-19 (22). Being Pharmacist and laboratory technicians had a good knowledge than the reference group nurses with AOR= 2.72 (1.25-5.94) and =1.98 (1.00-3.94) 95% CI respectively.

Health workers who were confident in winning the fight against COVID-19 were more knowledgeable than those who were not confident with AOR= 1.64 (1.14-2.37) 95% CI. In multiple logistic regression analyses, the COVID-19 knowledge score (OR: 0.75-0.90, P<0.001) was significantly associated with a lower likelihood of negative attitudes and preventive practices towards COVID-2019 (3). Work place, wearing mask while leaving home and washing hands or using sanitizer were not associated with knowledge.

Conclusion

The study identified there was a huge knowledge gap on the asymptomatic transmission of the disease and the need of child protection which needs seminars or short term trainings for the health professionals to fill the knowledge gap. But the rest of the knowledge questions had got satisfactory answers. The attitude towards the control of the disease and successfully winning the fight **a**gainst the disease is still very poor. This needs improvement by building the capacity of the government health system which helps the health professionals to be more confident. Avoiding going to crowded place, wearing mask and proper hand washing or using sanitizer were not adequate. All prevention methods should be performed perfectly to protect themselves and others.

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Competing Interest

The authors declare that this manuscript was approved by all authors in its current form.

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