ORIGINAL RESEARCH

COVID-19 Knowledge, Attitudes, and Prevention Practices Among People with Hypertension and Diabetes Mellitus Attending Public Health Facilities in Ambo, Ethiopia

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Background: To confirm effective preventive practice and reduce the risk of COVID-19 data on knowledge, attitude, and preventive practices (KAP) are essential. Therefore, the current study was designed to evaluate the KAP of COVID-19 among people with hypertension (HTN) and/or diabetes mellitus (DM) attending public health facilities in Ambo town.

Patients and Methods: Institutional-based cross-sectional study design was done among patients with HTN and/or DM from June 2020 to September 2020 at Ambo University Referral Hospital (AURH) and Ambo General Hospital (AGH). To identify the associated factors with poor practice and knowledge, logistic regression analyses were used.

Results: The mean age of the study respondents was 44.6 years (± 9.84) of which the majority were male 235 (55.6%) and 159 (37.59%) of the participants had good knowledge. Concerning attitude, 335 (79.2%) have strongly believed that DM and HTN patients were more at risk of death because of COVID-19. Only 44 (10.4%) of them had a good level of COVID-19 prevention practice measures. Patients who use the source of information daily were 54.4% less likely to have poor knowledge about COVID-19 than those who use it weekly. Participants with no formal education were 3 times more likely to have poor COVID-19 prevention practice than those who were with formal education, and participants who have poor knowledge about COVID-19 were 2 times more likely to have poor COVID-19 prevention practice than those who have knowledge.

Conclusion: The prevalence of poor knowledge about COVID-19 was low, and only less than ¾ of the participants strongly believed COVID-19 as a serious disease. A small percentage of participants had a good level of COVID-19 prevention practice. Good knowledge had an association with a good level of prevention practice. So, health sectors should work to increase accessibility of COVID-19 information.

Keywords: knowledge, attitude, practice, COVID-19, hypertension, diabetes mellitus

Introduction

COVID-19 is a new strain from a family of coronavirus, first isolated in January 2020, in Wuhan city, one of the cities in China.[1] The virus has rapidly disseminated all over the world with high mortality and morbidity. As a World health organization (WHO) weekly report of August 24, 2020; 23,057, 288 cases with 800, 906 deaths were reported worldwide and 1,003,379 cases with 20,321 deaths in Africa.[2] Ethiopia is one of the countries where the disease is rapidly

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spreading. As of August 27, 2020, 1236 new cases and a total of 40,407 cases as well as 745 deaths were reported.[3]

The transmission of COVID-19 is thought to happen mostly through respiratory droplets. During individual coughs, sneezes, or talks the virus released within the respiratory secretions can infect another person if it makes direct contact with the mucous membranes. Another mode of viral transmission is when a person touches a contaminated surface with the virus and then touches her or his nose, mouth, and eyes.[4] The time between exposure to COVID-19 and onset of the symptom for COVID-19 is supposed to be in 14 days, with most cases happening approximately five to six days after exposure.[5]

COVID-19 is one of the top reasons for cardiovascular disease, which can cause myocarditis, heart failure, pericarditis, and cardiac conduction defects.[6] Furthermore, in patients with a history of cardiovascular diseases, COVID-19 can cause a change in the progress of the underlying disease and rising mortality.[7] Increase in blood glucose levels can lead to the destruction of immune systems of individuals and results in a decrease in the abilities to fight different types of infections, such as COVID-19; accordingly, the virus can cause more abnormalities to the body.[8]

The study conducted in China revealed that patients with cardiovascular disease have a high risk of severe COVID-19 infection. A large observational report, which was conducted on 1099 patients with COVID-19 showed that out of 173 patients with severe disease were with co-morbidities of hypertension (23.7%) and DM (16.2%).[9] Another study which recruited 52 severe COVID-19 patients indicated that out of 32 non-survived patients, 7 (22%) were DM patients.[10]

Thus, to minimize the risk of transmission, communities are required to follow accepted infection control practices such as frequent hand washing using soap, hand rubbing with an alcohol-based sanitizer, social distancing, awareness of the symptom frequently, wearing the mask in the community, and practicing respiratory hygiene.[11] To confirm effective protective practice and reduce the risk of COVID-19 data on knowledge, attitude, and preventive practices (KAP) are essential. This data would be important in providing the required approaches to be implemented to contain the spread of the virus. Additionally, the funding of the study would improve and assess the currently available programs to enhance attitudinal changes. Furthermore, behavioral changes and positive attitude mainly depend on the level of perceptions and knowledge towards preventive practices of COVID-19. Therefore, this study was designed to assess the knowledge, attitude, and prevention practices of COVID-19 among patients of HTN and DM attending Public health facilities in Ambo town, West Shoa zone, Oromia, Ethiopia.

Patients and Methods
Study Design, Setting, and Population

The multi-center institution-based cross-sectional study was conducted in Ambo town at AURH and AGH from June 2020 to September 2020. Ambo is 112 Km away to the west from the capital city Addis Ababa. All patients with HTN and/or DM who come consecutively to the chronic care clinics during the data collection period were enrolled in this study. All patients with HTN and/or DM greater than or equal to age 18 years on follow-up and newly diagnosed and gave consent to participate were included in the study and patients with a severe and uncorrectable cognitive, visual, or hearing impairment were excluded from the study.

Sample Size, Sampling Techniques, and Procedure

The sample size was calculated by a single population proportion formula $\left(Z_{\frac{\alpha}{2}}^2\right) * \frac{P(1-P)}{d^2}$ with the assumption, 95% confidence interval (Zα/2 = 1.96), 5% of marginal error (d), 10% non-response rate, 50% proportion (p) level since there is no published data during the initiation of this research that show the KAP toward COVID-19 among patients with HTN and/or DM in Ethiopia and then maximum sample size was considered for the current study.

$$n = \left(Z_{\frac{\alpha}{2}}^2\right) * \frac{P(1-P)}{d^2} = 1.96^2 * 0.5 * \frac{0.5}{0.05^2} = 384$$

The calculated sample size of this study was 423 respondents and this was allocated to each hospital proportionally. Finally, a consecutive sampling technique was used to collect the data from study participants.

Data Collection Tools

The initial draft of the study tool was developed by reviewing previously published similar studies,[12,13] and finalized in two steps. Accordingly, the developed tool was reviewed by senior researcher and professional through invitation by Ambo University's research and community service vice president and followed by a pilot

study conducted at another health facility having similar having demographic features. Then the necessary modifications were done based on the findings and incorporated to finalize the questionnaire. The initial questionnaire was prepared in English and converted into Afaan Oromo language by a professional expert and the data were conducted in the Afaan Oromo language. The questionnaire contains socio-demographic characteristics of study participants, 26 questions assessing knowledge answered as yes, no or "I don't know" option. An incorrect or I do not know the answer was given 0 points and the correct answer was assigned 1 point. Respondents' overall knowledge was classified as good, moderate, and poor if the score was between 80% and 100% (20.8–26 points), 60% and 79% (15.6–20.5 points), and less than 60% (<15.6 points) respectively, using Bloom's cut-off point. In the attitudes part, 11 questions assessing attitude were used and the first negative questions were transformed into a positive question. Then, scores were scored based on the participants'' response to each statement as, 1 = certainly not, 2 = probably not, 3 = probably yes, and 4= Most certainly. Total scores ranged from 11 to 44, with high scores indicating positive attitudes. Likewise, 17 questions assessing preventive practice were responded as "yes or no"; 1 point for the correct answer and 0 points for the incorrect answer was given. Respondents' overall practice was classified as good, moderate, and poor if the score was between 80% and 100% (13.6–17 points), 60% and 79% (10.2–13.6 points), and less than 60% (<10.2 points) respectively, using Bloom's cut-off point. The training was provided for data collectors ahead of data collection. Eight BSc health professionals collected the data by using appropriate personal protective materials like a surgical face mask, glove, and washing their hands with alcohol-based hand sanitizer, and standing around 2 meters away from the participant.

Processing and Analysis of Data
Before entering into a statistical package for social sciences (SPSS) version 20 for analysis, data were cleaned and checked for completeness. Then, the data were analyzed descriptive statistics to summarize the knowledge, attitude, and prevention practice of the participants toward COVID-19 and presented by percentage (%) frequency and mean ± SD. Outlier and multi-collinearity were also checked. Logistic regression analyses were used to identify potential associated factors of poor knowledge and poor practice. The independent variables in bivariate

analysis with p < 0.25 were considered and entered into multivariable logistic regression. The strength of the association of risk factors was established by calculating the crude odds ratio (COR) and the adjusted odds ratio (AOR) with a 95% confidence interval (CI). Lastly, the results were presented in the graphical and tabular form. The significance level with P-value less than 0.05 was considered as statistically significant for this study purpose.

Ethical Consideration
The study was planned and accompanied following the ethical principles established by Ambo University. A letter of ethical approval was obtained from the Ethical Review Board of Ambo University with Ref. No AU/937/2/18/12. Written informed consent was obtained from respondents who participated in the study. All the information was kept confidential and the study was done as per the ethical guidelines of the Declaration of Helsinki.

Results
Socio-Demographic Characteristics of the Study Participants
In this study, a total of 423 people living with HTN and/or DM participated in a response rate of 100%. The mean (±SD) age of the study respondents was 44.6 years (± 9.84) of which the majority were male 235 (55.6%). The majority of the participant's religion was orthodox 199 (47.0%) followed by protestant 190 (44.9%) and most of them resided in urban. Among the total study respondents, around 338 (79.9%) were married. Concerning the educational level of the respondents, 112 (26.5%) was learned from grades 7–12. Regarding the types of disease of the study participants, 227 (53.7%) were hypertensive while 59 (13.9%) of the study participants were both diabetic and hypertensive. Additionally, chi-square test was used for each domain score of the study participants were categorized into 3 categories: good, fair and poor. The results of this categorization are shown (Table 1).

Knowledge About COVID-19 Among HTN and DM Patients
In this study, 266 (62.9) study respondents stated that COVID-19 have no specific effective treatment and vaccine. The majority of 416 (98.3) of the study respondents reported that Covid-19 is a contiguous disease. About 338 (79.9%) of the respondents indicated that they were conscious of the incubation period of the diseases as 2 to 14 days to observe

Table I Socio-Demographic of HTN and DM Patients and Categorization of Study Participants' Score on KAP Domains Based on Socio-Demographics of HTN and DM Patients, West Shoa, Ethiopia, 2020 (N=423)

Variables	Category	Knowledge Level			P-value	Practice			P-value	Attitude			P-value
		Poor	Moderate	Good		Poor	Moderate	Good		Poor	Moderate	Good	
Sex	Male	72	71	92	0.76	103	107	25	0.77	13	98	124	0.203
	Female	61	60	67		89	80	19		7	94	87	
Age	18–40	39	67	72	0.001	80	84	14	0.166	5	73	100	0.000
	41–60	60	48	65		74	74	25		7	73	93	
	>60	34	16	22		38	29	5		8	46	18	
Religion	Orthodox	64	59	76	0.422	95	80	24	0.35	12	102	85	0.033
	Protestant	58	58	74		83	91	16		7	75	108	
	Muslim	6	6	1		8	4	1		0	9	4	
	Wakeffata	5	8	8		6	12	3		1	6	14	
Residence	Rural	66	59	55	0.028	95	76	9	0.002	12	91	77	0.023
	Urban	67	72	104		97	111	35		8	101	134	
Ethnics	Oromo	117	113	140	0.674	168	164	38	0.535	20	166	184	0.019
	Amhara	11	12	16		16	19	4		0	23	16	
	Tigre	4	6	2		7	4	1		0	1	11	
	Gurage	1	0	1		1	0	1		0	2	0	
Educational level	No formal education	47	29	25	0.000	57	38	6	0.000	11	64	26	0.000
	Grades 1–6	38	33	31		48	44	10		3	60	39	
	Grades 7–12	24	39	49		57	49	6		3	42	67	
	Diploma	13	11	23		17	22	8		1	13	33	
	First degree and above	11	19	31		13	34	14		2	13	46	
Marital status	Single	13	24	31	0.188	32	34	2	0.034	0	27	41	0.069
	Married	114	101	123		157	142	39		19	154	165	
	Divorce	6	6	5		3	11	3		1	11	5	
Occupation	Private	49	48	57	0.000	75	62	17	0.001	7	72	75	0.000
	Farmer	62	48	32		75	60	7		11	82	49	
	Public servant	16	26	57		27	55	17		2	24	73	
	Others	6	9	13		15	10	3		0	14	14	
Type of disease	HTN	67	81	79	0.018	110	97	20	0.262	13	99	115	0.376
	DM	40	42	55		56	67	14		3	63	71	
	Both	26	8	25		26	23	10		4	30	25	

Abbreviations: SD, standard deviation; HTN, hypertension; DM, diabetes mellitus.

the sign and symptoms of the person infected with the virus. About 268 (63.4%) of study respondents distinguished that as COVID-19 is caused by a virus and also having information of symptoms including cough, fever, headache, and sore throat by 380 (89.8%), 371 (87.7%), 247 (58.4%), 194 (45.9%) respondents, respectively. Moreover, the majority of participants 355 (83.9%) knew COVID-19 can be spread directly through cough from infected people, and reported potentially the disease is more dangerous in HTN and DM patients by 385 (91%) and 370 (87.5%), respectively. Besides, 268 (63.4%) of respondents knew that people with age group >50 years old are at a higher risk of severe disease and death as shown in (Table 2).

The Overall Level of Knowledge About COVID-19 Among HTN and DM Patients

Analysis of the data collected showed that the prevalence of poor knowledge about COVID-19 among the study participants was 31.44% whereas the prevalence of good and moderate knowledge were 37.59% and 30.97%, respectively, together consisting about 68.66% of good knowledge of COVID-when compared to those with poor knowledge (Figure 1).

An Attitude About COVID-19 Among HTN and DM Patients

The majority of participants 288 (68.1%) strongly agreed that COVID-19 is a cause for serious illness, while 87 (20.6%) agree that COVID-19 is a curable disease. Two hundred twenty-seven (53.7%) participants reported that the probability of getting COVID-19 is high. The majority of 306 (72.3%) of the study participants highly agreed early detection of COVID-19 can improve treatment outcomes. COVID-19 disease results in death in cases and COVID-19 disease can be transmitted through household pets to humans were considered not agreed by 201 (47.5%) and 195 (46.1%) respondents, respectively (Table 3).

Table 2 Knowledge About COVID-19 Among HTN and DM Patient at AURH and AGH, West Shoa, Ethiopia, 2020 (N=423)

Knowledge-Related Questions	Response		
Questions Related to Knowledge	Yes (N, %)	No (N, %)	I Do not Know (N, %)
Covid-19 is a contiguous disease	416 (98.3)	6 (1.4)	1 (0.3)
Covid-19 exist in Ethiopia	411 (97.1)	3 (2.8)	9 (2.1)
The perception causes of COVD-19 virus	268 (63.4)	31 (36.6)	124
the incubation period of the diseases is 2 days to 14 days	338 (79.9)	1 (0.2)	84 (19.8)
COVID-19 had no effective treatments and vaccine currently	266 (62.9)	113 (26.7)	44 (10.4)
COVID-19 is more dangerous with people age >50 years old	268 (63.4)	149 (35.2)	6 (1.4)
Is fever a symptom of COVID-19	371 (87.7)	51 (12.1)	1 (0.2)
Is cough a symptom of COVID-19	380 (89.8)	43 (10.2)	0
Is sore throat is a symptom of COVID-19	194 (45.9)	229 (54.1)	0
Is body pain a symptom of COVID-19	134 (31.7)	289 (68.3)	0
Headache is a symptom of COVID-19	247 (58.4)	176 (41.6)	0
Is diarrhea a symptom of COVID-19	82 (19.4)	341 (80.6)	0
Constipation is a symptom of COVID-19	86 (20.3)	337 (79.7)	0
The prevalence of COVID-19 increases in Ethiopia	391 (92.4)	14 (3.3)	18 (4.3)
The disease is transmitted directly through cough	355 (83.9)	68 (16.1)	0
The disease is transmitted directly through sneezing	328 (77.5)	95 (22.5)	0
The disease is transmitted directly through talking with infected individuals	344 (81.3)	78 (18.5)	1 (0.2)
The disease is transmitted directly through contacts with an infected surface	336 (79.4)	86 (20.4)	1 (0.2)
The disease is transmitted directly through hugging	336 (79.4)	87 (20.6)	0
The disease is transmitted directly through kissing	295 (69.7)	128 (30.3)	0
COVID-19 is more dangerous in HTN patients	385 (91)	38 (9)	0
COVID-19 is more dangerous in DM patients	370 (87.5)	53 (12.5)	0
COVID-19 is more dangerous in elderly patients	328 (77.5)	95 (22.5)	0
COVID-19 more dangerous in immune-compromised patients	268 (63.4)	155 (36.6)	0
COVID-19 is more dangerous for cancer patients	229 (54.1)	193 (45.6)	1 (0.2)
COVID-19 is more dangerous in patients with respiratory problems	248 (58.6)	175 (41.4)	0

Preventive Practice of COVID-19 Among HTN and DM Patients

Four hundred seven (96.2%) study participants reported that they visit health facilities if they suspect infection with COVID-19. The majority of 398 (94.1%) of the respondents had avoided close contact with individuals with cold or flu symptoms such as cough, fever, or sneezing. About 388 (91.7%) of the respondents cover their nose and mouth when sneezing or coughing, and washing their hands and 359 (84.9%) of the participants were clean frequently touched objects and surfaces. Only 140 (33.1%) of the study participants washed their hands often using soap for at least 20 seconds to stop spreading COVID-19. Avoiding public transportations (bus, taxi, plane, train, etc.) to reduce COVID-19 spreading was the least 137 (32.4%) practiced preventive measure (Table 4).

Factors Associated with Poor Knowledge Among HTN and DM Patients

Logistic regression analysis showed that the knowledge level about COVID-19 was decreased by 1.8% as age increases by 1 year (CI: 0.965, 0.998; P-value: 0.028). Those patients who were running their private business are 3.1 times more likely to have poor knowledge about COVID-19 than those who were public servants (CI: 1.3,7.6; P-value: 0.011). Patients who heard information about COVID-19 through social media are 53% less likely to have poor knowledge than those who heard from mass media (CI: 0.22,0.99, P-value: 0.047). Those patients who use the source of information daily were 54.4% less likely

to have poor knowledge about COVID-19 than those who use it weekly (CI: 0.209, 0.995; P-value: 0.049) (Table 5).

Factors Associated with Poor Prevention Practice on COVID-19 Factors Among HTN and DM Patients

Multivariate logistic regression analysis showed that those patients with no formal education are 3.1 times more likely to have poor COVID-19 prevention practice than those who are with first degree and above (CI: 1.17, 8.03; P-value: 0.023) and those patients who have poor knowledge about COVID-19 are 1.66 times more likely to have poor COVID-19 prevention practice than those who have knowledge level of moderate and above (CI: 1.06, 2.60; P-value: 0.028). Those patients who used sources of information about COVID-19 on daily basis are 66.4% less likely to have poor COVID-19 prevention practice than those who used the information weekly (CI: 0.143, 0.743; P-value: 0.008) (Table 6)

Overall COVID-19 Preventive Practice

Analysis of the data collected showed that the prevalence of poor COVID-19 preventive practice among the study participants was 45.39% whereas the prevalence of good practice was 10.40% (Figure 1).

Discussion

For a disease like COVID-19, protecting self and others rely on obeying with the recommended protocols. However, study assessing KAP regarding COVID-19 in selective disease populations (risk groups), like the current
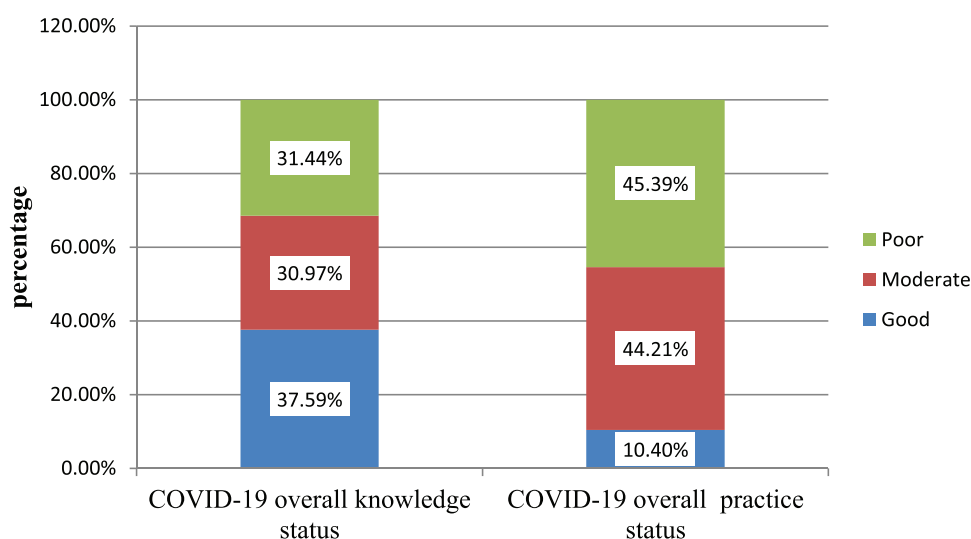

Figure 1 Overall level of knowledge and preventive practice about COVID-19 among HTN and DM patients at AURH and AGH, West Shoa, Ethiopia.

Table 3 Attitude/Perception of Hypertensive and DM Patients Towards COVID-19, AURH and AGH, West Shoa, Ethiopia, 2020 (N=423)

Attitude-Related Questions	Response			
	Most Certainly (N, %)	Probably Yes (N, %)	Probably Not (N, %)	Certainly Not (N, %)
Did your belief that COVID-19 is a serious disease?	288 (68.1)	123 (29.1)	10 (2.4)	2 (0.5)
Do you think your chance of getting COVID-19 high?	134 (31.7)	227 (53.7)	59 (13.9)	3 (0.7)
Do you think that you will manage to carry out prevention measures recommended by the authority?	1 (0.2)	9 (2.1)	216 (51.1)	197 (46.6)
Do you think that early diagnosis of COVID-19 can enhance treatment outcomes?	306 (72.3)	103 (24.3)	12 (2.8)	2 (0.5)
Do you believe that COVID-19 can be managed at home?	151 (35.7)	116 (27.4)	67 (15.8)	89 (21)
Do you believe that health education can help in the prevention of COVID-19 spreading?	288 (68.1)	129 (30.5)	6 (1.4)	0 (0%)
Did you agree that COVID-19 is a curable disease	87 (20.6)	257 (60.8)	65 (15.4)	14 (3.3)
Did you think that COVID-19 results in death	9 (2.1)	46 (10.9)	167 (39.5)	201 (47.5)
In my opinion household pets can transmit COVID-19 to humans	28 (6.6)	53 (12.5)	147 (34.8)	195 (46.1)
As to my opinion, the concerned body should quarantine patients with COVID-19 in a special quarantine center	280 (66.2)	126 (29.8)	15 (3.5)	2 (0.5)
Do you think a patient with a chronic disease like HTN, DM, and others are more vulnerable to the effect of COVID-19 than other people	335 (79.2)	70 (16.5)	18 (4.3)	0 (0%)

Table 4 Frequency of Practice-Related Response by HTN and DM Patients at AURH and AGH, West Shoa Ethiopia, 2020 (N=423)

Practice-Related Questions	Response	
	Yes	No
	(N, %)	(N, %)
I will visit the health facility in suspecting infection with COVID-19	407 (96.2)	16 (3.8)
I avoid going out of my home to prevent spreading COVID-19	299 (70.7)	124 (29.3)
I wash my hands often using soap for at least 20 seconds	140 (33.1)	283 (66.9)
I avoid touching nose, eyes, and mouth with hand ahead of washing	140 (33.1)	283 (66.9)
Covering mouth and nose after coughing/sneezing and washing your hands	388 (91.7)	35 (8.3)
I avoid close contact with anyone with flu or cold symptoms such as cough, fever, or sneezing	398 (94.1)	25 (5.9)
Clean frequently touched objects and surfaces	359 (84.9)	64 (15.1)
I disinfect frequently touched surfaces and objects	273 (64.5)	150 (35.5)
I stay at home if sick, except to get medical care	323 (76.4)	100 (23.6)
I avoid large gatherings	327 (77.3)	96 (22.7)
To prevent spreading COVID-19, I avoid consuming food outside	289 (68.3)	134 (31.7)
I avoid public transportations to prevent spreading COVID-19	137 (32.4)	286 (67.6)
To prevent the spreading of COVID-19, I avoid going to work	141 (33.3)	282 (66.7)
Did you perform physical exercise regularly than before COVID-19?	142 (33.6)	281 (66.4)
Did you visit your doctor or health care facility for refill frequently similar to before the report of COVID-19 in Ethiopia	323 (76.4)	100 (23.6)
To prevent the spreading of COVID-19, I use herbal products and traditional medicine	272 (64.3)	151 (35.7)
To prevent contracting COVID-19, I take fruit and vegetables	178 (42.1)	245 (57.9)

study, are very limited. Hence, this study was designed to evaluate Knowledge, Attitudes, and prevention practice of COVID-19 among patients with HTN and DM attending the public hospitals in the Ambo town West Shoa Zone.

The knowledge, attitude, and prevention practice toward COVID-19 is an important issue because studies reported as they have to have health impact on COVID-19.[14–16] We had intentionally excluded children and adolescents less

Table 5 Factors Associated with Poor Knowledge Among HTN and DM Patients in Logistic Regression Analyses, at AURH and AGH, West Shoa, Ethiopia, 2020 (N=423)

Variables	Category	Poor Knowledge		95% C.I.		COR	P-value	95% C.I.		AOR	P-value
		Yes	No	Lower	Upper			Lower	Upper		
Age	Age	44.6±16.8		0.959	0.984	0.971	0.000	0.965	0.998	0.982	0.028*
Residence	Rural	66	114								
	Urban	67	176	1.006	2.300	1.52	0.047	0.413	1.613	0.816	0.559
Educational level	No formal education	47	54								
	Grades 1–6	38	64	0.837	2.567	1.466	0.181	0.643	2.349	1.229	0.532
	Grades 7–12	24	88	1.756	5.798	3.191	0.000	0.810	3.671	1.724	0.158
	Diploma	13	34	1.076	4.815	2.276	0.031	0.243	2.065	0.708	0.528
	First degree and above	11	50	1.849	8.467	3.956	0.000	0.423	3.550	1.226	0.707
Marital status	Single	13	55								
	Married	114	224	0.244	0.885	0.464	0.020	0.347	1.798	0.790	0.574
	Divorce	6	11	0.135	1.388	0.433	0.159	0.209	3.080	0.803	0.749
Occupation	Private	49	105								
	Farmer	62	80	0.375	0.968	0.602	0.036	0.315	1.431	0.671	0.302
	Public servant	16	83	1.285	4.561	2.421	0.006	1.300	7.600	3.143	0.011
	Others	6	22	0.652	4.488	1.711	0.275	0.329	2.883	0.973	0.961
From where did you hear it for the first time?	Social media	12	52								
	Mass media	90	141	0.183	0.714	0.362	0.003	0.224	0.990	0.471	0.047
	Family/friend	19	70	0.379	1.905	0.850	0.693	0.625	3.709	1.522	0.355
	Health care professionals	12	27	0.206	1.310	0.519	0.165	0.303	2.361	0.846	0.749
How frequently did you use this source of information?	Daily	113	267								
	Weekly	16	18	0.234	0.967	0.476	0.040	0.209	0.995	0.456	0.049
	Monthly	4	5	0.139	2.006	0.529	0.349	0.117	2.245	0.513	0.375

Note: *Significance value at P-value less than 0.05.

than 18 years and patients with a severe and uncorrectable cognitive, visual, or hearing impairment were excluded from the study as we wanted to assess the KAP of the patients and not their parents.

The present study found about 68.66% of the study participants have moderate and good knowledge. This finding is relatively similar (66.1%) with that of the cross-sectional study conducted among patients with chronic medical conditions in Addis Ababa.[17] The similarity could be due to the uniformity of the study population as both types of research focused on the patient with chronic diseases. The high proportion of correct answer to knowledge-related questions among the respondents may be due to the characteristics like they gained awareness and

Table 6 Factors Associated with Poor Practice on COVID-19 Prevention Among Hypertensive and DM Patients on Chronic Follow-Up at AURH and AGH, West Shoa, Ethiopia, 2020 (N=423)

Variables	Category	Poor Practice		95% C.I.		COR	P-value	95% C.I.		AOR	P-value
		Yes	No	Lower	Upper			Lower	Upper		
Residence	Rural	95	85								
	Urban	97	146	1.140	2.483	1.68	0.009	0.658	2.078	1.170	0.593
Educational level	No formal education	57	44								
	Grades 1–6	48	54	0.838	2.534	1.457	0.182	0.679	2.247	1.235	0.489
	Grades 7–12	57	55	0.728	2.146	1.250	0.418	0.580	2.139	1.114	0.747
	Diploma	17	30	1.120	4.665	2.286	0.023	0.523	3.641	1.380	0.515
	First degree and above	13	48	2.309	9.907	4.783	0.000	1.169	8.031	3.064	0.023*
Marital status	Single	32	36								
	Marriage	157	181	0.608	1.727	1.025	0.927	0.472	1.649	0.882	0.694
	Divorce	3	14	1.092	15.759	4.148	0.037	0.916	15.86	3.811	0.066
Occupation	Private	75	79								
	Farmer	75	67	0.537	1.339	0.848	0.479	0.675	2.555	1.313	0.423
	public servant	27	72	1.470	4.360	2.532	0.001	0.718	3.249	1.528	0.271
	Others	15	13	0.367	1.844	0.823	0.636	0.290	1.731	0.708	0.450
Poor Knowledge	Yes	75	58								
	No	117	173	1.262	2.896	1.912	0.002	1.056	2.597	1.656	0.028*
How frequently did you use this source of information?	Daily	161	219								
	Weekly	25	9	0.120	0.582	0.265	0.001	0.143	0.743	0.326	0.008*
	Monthly	6	3	0.091	1.492	0.368	0.161	0.123	2.170	0.518	0.368

Note: *Significance value at P-value less than 0.05.

knowledge about the disease and its transmission, via social media, radios and television news, and educational level as more than 50% had got a formal education in different levels. The positive association found between knowledge, and educational background, and access to a source of information supports our claim. However, the funding was lower than the study conducted in China among health care workers in which the knowledge of HCW towards COVID-19 prevention was high (89%).[18] And in Pakistan in which the knowledge towards COVID-19 prevention was 92.3%.[19] This discrepancy could be due to the difference in the study population. These previous studies were conducted among health professionals to assess their knowledge level, but the current study is conducted among the general population with different educational levels. This is because health professional has more exposure to the information regarding the disease.

Being a public servant, hearing COVID-19 information through social media, using the source of information (media) daily was reported to have a smaller risk of poor COVID-19 knowledge when compared with their counterparts. This might be because of getting information through different meetings and media for the former and

widespread airing of COVID-19 information through media for the latter two factors. In contrast to this, the Web-based study done in India among DM patients has shown that being urban residence had a statistically significant association with better knowledge.[20] The present study has also shown indifference with the studies done in Vietnam and of the Kingdom of Saudi Arabia which have shown being male to have an association with lesser knowledge.[21,22] This study has shown similarity as it has shown a significant decrease of knowledge with a 1-year increase in age as reported with the very similar study conducted among chronic patients in Addis Zeman hospital, North West part of Ethiopia, which has revealed age, illiteracy, rural resident and lower to have a significant association with poor knowledge too.[23]

A study conducted in Pakistan among 242 patients with DM found that only 78.5% of the participants were aware of the modes of transmission of COVID-19.[24] In this study, it was found that 83.9% and 77.5% of the participants state that COVID-19 spreads via cough and sneeze, respectively. However, many participants (54.1%) were not aware of the fact that sore throat is a symptom of COVID-19. Similarly, as many as 68.3% of the respondents were not aware of the fact that body pain a symptom of COVID-19, even though, they are at an increased risk of severe disease and mortality from COVID-19. It is thus necessary that health education programs for people with HTN and DM need more emphasis on these aspects while imparting awareness about COVID-19.

Concerning attitude, 79.2% of the participants strongly believed that DM and hypertensive patients were more at risk of death because of COVID-19, and 68.1% of the participants have strongly agreed with the idea, COVID-19 can cause serious illness and health education could help to prevent the disease as well. About 335 (79.2%) of the respondent believes that a patient with a chronic disease like HTN, DM, and others are more vulnerable to the effect of COVID-19 than other people. Approximately 306 (72.3%) mostly agree that that early diagnosis of COVID-19 can enhance treatment outcomes and 288 (68.1%) believed that health education can help in the prevention of COVID-19 spreading. Furthermore, 280 (66.2%) are agreed Ethiopian government should quarantine patients with COVID-19 in a special quarantine center. These Positive attitudes help control and COVID-19 spread, to safeguard citizens and ensure their well-being. Very few numbers of the participants strongly agreed with the statement, which says COVID-19 will result in death and being

able to carry out prevention measures set by the authority with 2.1% and 0.2%, respectively. Similarly, only 10.4%, of participants had a good level of COVID-19 prevention practice measures.

The number of participants with good knowledge, favorable attitude, and good COVID-19 prevention practices in this study is lower when compared with the results of the study done in Jeddah, Nigeria, Malaysia, and Saudi Arabia, the main reasons of which were; those done in Jeddah and China was among medical students,[25,26] and the one in Nigeria was among trained correctional officers,[27] who would have gotten better opportunity to access information's from both formal and informal sources and the first outbreak of the disease in Asian countries.[21,27,28] Similarly, the percentage of participants with good knowledge in the present study is lower when compared with even the study done in Ethiopia within which data were collected over Facebook with the probable reason for getting better access to online disseminated pieces of information for the participants. Unfortunately practicing prevention measures was very low as in this study too.[29] The problem might be negligence among our society, which might have developed because of the lesser report in the number of COVID-19 positive patients during the first four months.

The prevalence of poor practice to prevent COVID-19 spread in this study was high. This finding is relatively consistent with that of the cross-sectional study conducted among patients with chronic medical conditions in Addis Ababa.[17] However, this finding is not consistent with that of the studies in Iran.[30] The possible reason for this difference might be due to a difference in sources of information, frequency of media exposure, knowledge, and concern related to the outbreak of the disease by study participants which lead to the variation in the implementation of recommended actions and behaviors to prevent COVID-19. In the present study, there is a direct relationship between the knowledge and preventive practice of the study participants. Similar to this finding, a study in Ethiopia showed that a higher level of education was associated with high practice scores.[17] This may be because as an individual gets more educated, it will create an opportunity to acquire more information about COVID-19 prevention methods in many ways and will practice accordingly. Additionally, when someone gets more educated there will be a better understanding of control measures and preventive strategies related to COVID-19, and the ability to implement practice methods to protect COVID-19 spread will increase. Furthermore,

education results in better information collection habit and lead to efficient use of health inputs for prevention of COVID-19.[17]

Our study multivariate logistic regression analysis showed that those patients with no formal education, who have poor knowledge about COVID-19, who used sources of information less frequently (weekly) were more likely to have poor COVID-19 prevention practice. This portrayed a positive correlation between knowledge and practice as shown with the other study done in Ethiopia.[23]

The present study used face to face data collection methods rather than online Google form questionnaires. This could help to address part of the population who do not use the internet and were excluded from previous studies mentioned in this paper. Besides, the current study was conducted in the two hospitals in Ambo town and it could show the real picture of HTN and DM patients in the town. The limitation of this study was the study did not include admitted patients with these diseases and other risky patients with a chronic illness like other cardiac disease and respiratory disease.

Generally, in the present study, the individuals' knowledge on COVID-19 prevention was positively and significantly correlated with their practice. The findings showed that the improvement of people's knowledge on COVID-19 can increase their prevention for the disease and poor practices in this study might be primarily attributed to the lack of strict prevention and control measures implemented by government, such as enforcing peoples to wear a mask and prohibition public gatherings.

Conclusion

The prevalence of poor knowledge about COVID-19 among the study participants was very low. Daily usage of information sources had a positive impact to have good knowledge. Only less than three fourth of the participants believe COVID-19 as a serious disease. A very little number of participants had a good level of COVID-19 prevention practice. Good knowledge had an association with a good level of prevention practice. Those patients with no formal education; who had poor knowledge about COVID-19; who used sources of information less frequently (weekly) had a greater risk for the poor level of prevention practice. So the government, university, and hospitals should work to make intensive accessibility of COVID-19 information I with a special focus for patients with no formal education and have a greater risk for COVID-19 mortality like DM and Hypertensive patients.

Abbreviations

HTN, hypertension; DM, diabetic Mellitus; KAP, knowledge attitude and practice; AU, Ambo University; AURH, Ambo University Referral Hospital; AGH, Ambo General Hospital; COR, crude odds ratio; AOR, adjusted odds ratio; SPSS, statistical package for social sciences.

Author Contributions

All authors made a significant contribution to the work reported, in the conception, study design, execution, and acquisition of data, analysis and interpretation, took part in drafting, revising the article, gave final approval of the version to be published; have agreed on the journal to which the article has been submitted, and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest for this work.

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