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Original Research Article

Corona virus-19 preventive practices among primary health workers in Owo local government, Ondo state Nigeria

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is an infectious disease with high mortality. Healthcare workers are at the frontline of COVID-19 response and are prone to infection. Therefore, healthcare workers' preventive practices cannot be underestimated. The study aimed to determine the COVID-19 preventive practices among primary health workers in Owo, Local Government, Ondo state Nigeria.
Methods: This was a descriptive cross-sectional study. Consenting staff of primary health centres completed a pretested self-administered questionnaire. The data were analysed using descriptive and inferential statistics.
Results: A total of 400 respondents were recruited with 91 (22.8%) males and 309 (77.2%) females giving male to female ratio of 1:3.4. The age range of the respondents was 19-61 years with a mean age of 37.1 (8.1) years. More than half (58.0%) had tertiary level of education and most participant were community health extension workers (36.7%). Majority (99.8%) of the workers were aware of COVID-19 though 212 (53.0%) had good knowledge. The major source of information was the television (94.3%). About 351 (87.8%) had positive attitude despite 383 (95.7%) agreeing that COVID-19 is a problem in Nigeria. More than three-quarter (76.5%) had good practice. There was a significant relationship between knowledge (χ^2=29.072, p<0.001), attitude (χ^2=35.156, p<0.001) with practice. Educational level was the only factor associated with adherence to COVID-19 guideline (χ^2=5.256; p=0.022). The predictors of good practice include knowledge (95% CI =2.296-6.269; p<0.001) and attitude (95% CI =3.079-10.767; p<0.001).
Conclusions: The health workers had good knowledge, positive attitude and good preventive practices towards COVID-19.

Keywords: Attitude, Corona virus-19, Knowledge, Preventive practices, Primary health workers

INTRODUCTION

Coronavirus Disease 2019 also known as COVID-19 is an infectious enveloped, positive-sensed single stranded RNA virus of the family *Coronaviridae* of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) strain.[1] The virus was first reported in Wuhan, China in December 2019 among patients with viral pneumonia symptoms.[2-4] The virus causing COVID-19 spread mainly from person to person through respiratory droplets produced when an infected person coughs or sneezes.[5] These droplets can land in the mouths or noses of people who are nearby and be inhaled into the lungs. Other routes have also been implicated in the transmission of coronaviruses, such as contact with contaminated fomites and inhalation of aerosols produced during aerosol generating procedures.[5] Transmission of SARS-CoV-2 from asymptomatic individuals (or individuals within the

incubation period) has also been described, however, the extent to which this occurs remains unknown.[6] There is no antiviral curative treatment that has been recommended for treatment of COVID-19.[7]

The outbreak of coronavirus (COVID-19) has impacted the lifestyles of people all over the globe as well as the economies of virtually every country. COVID-19 has spread from Wuhan city to other cities of China and ultimately around the world since December 2019 and has speedily affected more than 215 countries.[8-10] The World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern on 30th January 2020 and a pandemic on 11th March 2020.[11] As of 22 June, 2021, more than 178.7 million cases have been reported globally with more than 3.87 million confirmed deaths.[12] Nigeria is also been affected by this infection and the number of confirmed COVID-19 cases are increasing by every passing day. The first index case in Nigeria was in Lagos on February 20, 2020 and has spread to other parts of the country.[13]

The battle against COVID-19 is still ongoing in Nigeria and other part of the world. In order to achieve success against the spread of COVID-19, the adherence to the preventive measures by the health workers and the public are very important. The knowledge, attitude and practice of the health workers towards COVID-19 infection will play a vital role in controlling this pandemic.[8,14] Like any other health events, healthcare workers are seen to have an increased risk of infection because of the regular encounters with infected persons.[15,16]

Healthcare workers (HCWs) are at the frontline of COVID-19 pandemic response and are therefore exposed to dangers such as exposure to the virus, long working hours, psychological distress, tiredness, occupational burnout and physical violence.[17] Poor understanding of the disease among HCWs can result in delayed diagnosis and treatment leading to rapid spread of the infections. More than 100 health workers have lost their lives to COVID-19.[18] As a result of this, guidelines for healthcare workers and online refresher courses have been developed by WHO, Centre for Disease Control (CDC) and various governmental organizations in various countries to boost the knowledge and prevention strategies.[19]

In order to revert this rising incidence of the infection, healthcare workers' knowledge, attitude and practice of measures of prevention cannot be underestimated. To our knowledge, no study has been done in Ondo-state, Nigeria to assess the prevention practices of COVID-19 among HCWs. The purpose of the study was to assess the prevention practices of HCWs in Owo, Ondo-state, toward COVID-19.

The objectives of the study were to assess the knowledge and attitude of primary health care workers towards COVID-19, assess the COVID-19 preventive practices of primary health care workers, determine the relationship between COVID-19 attitude and its preventive practices among primary health care workers and determine the factors associated with adherence to COVID-19 guideline among primary health care workers in Owo, Ondo State.

METHODS

The study was conducted in Primary Health Centres in Owo Local Government, Ondo State. Owo is located in South-western Nigeria, at the southern edge of the Yoruba Hills and at the intersection of roads from Akure, Kabba, Benin City and Siluko. Owo is situated halfway between the towns of Ile-Ife and Benin City and about 50km from Akure the capital of Ondo-State. Owo Local Government lies on longitude 5°35' E and latitude 7°11' N with a population of 425,700 and it has 39 primary health centres which are distributed in the 11 political wards of the local Government.[20] The primary healthcare centres have staff of several professions such as doctors, registered nurses, health assistant, pharmacist technician, laboratory technician, health educator, health information officer and community health extension workers.

The descriptive cross-sectional study was conducted between January 5, 2021 and June 30, 2021. Ethical approval with registration number FMC/OW/380/VOL.XCIV/190 was obtained from the Research and Ethics Committee of Federal Medical Centre, Owo, Ondo-state and written informed consent was obtained from the respondents for the study.

Inclusion criteria

Healthcare workers of primary health care facility of Owo local government, Ondo state who provided consent to participate in the study were included in the study.

Exclusion criteria

Staffs who were ill or not available during the period of study were excluded from the study.

The respondents were assured of the confidentiality of the information given and the data collected were entered and kept in a password protected computer.

Four hundred primary healthcare workers were recruited for the study using a multistage sampling method. The number allocated to each group of staff was determined using the formula n/N × 400, where n is the number in each group and N is the total number of staff.[21] Consenting health workers filled a pretested semi-structured questionnaire which were distributed consecutively during the break period. The health workers were allowed to fill the questionnaire at their convenience.

The data obtained from the questionnaires was analysed using the Statistical Package for Social Sciences (SPSS)

for Windows version 22. Descriptive and inferential statistics were done. The knowledge score was computed for a 41-item question on knowledge of COVID-19. Each item was assigned '+1' for correct knowledge and '0' for incorrect knowledge. The knowledge score was graded as good if respondents score ≥13 points and poor if score was <13 using the mean score of knowledge as the breakoff point.

The attitude score was computed for a 12-item question on attitude towards COVID-19. Each item was assigned '+1' for positive attitude and '0' for negative attitude. The attitude score was graded as good if respondents score ≥6 points and poor if score was <6 using the mean score of attitudes as the breakoff point. The preventive practice score was computed for a 14-item question on preventive practices towards COVID-19. Each item was assigned '+1' for good practices and '0' for bad practices. The preventive practices score was graded as good if respondents score ≥10 points and poor if score was <10 using the mean score of preventive practices as the breakoff point. The Chi-square (χ^2) was used to compare knowledge, attitude and preventive practices. Multivariate analysis was performed using logistic regression to evaluate sociodemographic variables and other variables like knowledge and attitude that are independently associated with good preventive practices of COVID-19. Odd ratio and 95% confidence interval were presented and used as measures of strength of association. Results were considered to be significant at $p \leq 0.05$.

RESULTS

Sociodemographic characteristics of the respondents

Four hundred completely filled questionnaire were analysed. There were 91 (22.8%) males and 309 (77.2%) females giving male to female ratio of 1:3.4.

The sociodemographic characteristics of the respondents is shown in Table 1. The age range of the respondents was 19-61 years with a mean age of 37.1 (8.1) years. The age group 31-40 years accounted for more than a third of the respondents 158 (39.5%). Majority, 232 (58.0%) of the respondent highest level of education was tertiary education. Most participant were the community health extension workers 147 (36.7%) while the least was the doctor 5 (1.3%). The Yoruba tribe 369 (92.3%) was the dominant tribe.

Level of awareness of COVID-19 among respondents

Majority, 399 (99.8%) of the respondents were aware of COVID-19 while surprisingly, one (0.2%) person was not aware of COVID-19.

Respondents' knowledge of COVID-19

More than half, 212 (53.0%) of the respondents had good knowledge of COVID-19 infection while 188 (47.0%) had poor knowledge of the COVID-19 disease. The mean level of knowledge towards COVID-19 was 13.0 (2.4).

Table 1: Socio-demographic characteristics of respondents.

Variables	Frequency (n=400)	%
Age group (years)		
19-30	104	26.0
31-40	158	39.5
41-50	118	29.5
50-61	20	5.0
Gender		
Male	91	22.7
Female	309	77.3
Highest level of education		
Primary	17	4.3
Secondary	151	37.7
Tertiary	232	58.0
Religion		
Christianity	349	87.3
Islam	51	12.7
Occupation		
Doctor	5	1.3
Nurse	56	14.0
Pharmacist technician	8	2.0
Laboratory technician	8	2.0
CHEW[A]	147	36.7
Dietician	5	1.3
Health information officer	53	13.2
Health educator	27	6.7
Health assistant	91	22.8
Ethnicity		
Yoruba	369	92.3
Igbo	20	5.0
Ebira	7	1.8
Esan	2	0.5
Efik	1	0.2
Hausa	1	0.2

[A]CHEW- Community health extension workers

Knowledge of COVID-19 mode of transmission and clinical presentation

More than three-quarter (89.3%) of the respondents were aware that the infection can be contacted by coming in contact with person sick of COVID-19 even though only 45.0% are aware that participating in burial rites of a person who died from COVID-19 is a mode of transmission. Impressively, 99.0% believed that the infection is not a spiritual attack. All respondents (100.0%) are aware of the signs of COVID-19 with loss of smell and taste (99.8%) and fever (91.8%) been the commonly known clinical features of the infection (Table 2).

Table 2: Knowledge of COVID-19.

Variables[#]	Frequency (%)
Mode of transmission	
From infected animal to man	334 (83.5)
Contact with person sick of COVID-19	357 (89.3)
Through body fluid (blood, urine, stool)	167 (41.7)
Contact with beddings, clothing, and other personal utensils (plates, cups) of a person sick of COVID-19	155 (38.7)
Through insect bite	388 (97.0)
Through the air	82 (20.5)
Through spiritual attack	396 (99.0)
Participating in burial rites of a person who died from COVID-19	180 (45.0)
Sharing sharp objects such as razors, needles with person who has COVID-19	259 (64.8)
Through saliva	233 (58.3)
Clinical presentation	
Awareness of the signs of COVID-19	400 (100.0)
Fever ≥38°C	367 (91.8)
General feeling of unwell	208 (52.0)
Weakness	293 (73.3)
Headache	299 (74.8)
Sore throat	336 (84.0)
Abnormal bleeding from any part of the body	338 (84.5)
Body pain	209 (52.3)
Vomiting or diarrhoea (with or without blood)	212 (53.0)
Loss of smell	399 (99.8)
Loss of taste	399 (99.8)
Awareness of the incubation period	361 (90.3)

[#]Multiple response

Table 3: Knowledge of cure and prevention of COVID-19.

Variables	Frequency (%)
Awareness of cure for COVID -19	
Yes	26 (6.5)
No	357 (89.3)
I don't know	17(4.2)
Awareness of prevention of contracting COVID-19	
Yes	400 (100.0)
No	0 (0.0)
By not touching person with suspected of COVID-19	
Yes	391 (97.8)
No	9 (2.2)
By staying at home	
Yes	310 (77.5)
No	90 (22.5)
Regular handwashing with soap and water	
Yes	361 (90.3)
No	39 (9.7)
By ensuring social distance	
Yes	361 (90.3)
No	39 (9.7)
Regular handwashing with water alone	
Yes	30 (7.5)
No	370 (92.5)
Regular use of hand sanitizer	
Yes	362 (90.5)
No	38 (9.5)
Drinking salt water	
Yes	7 (1.8)
No	393 (98.2)

Continued.

Variables	Frequency (%)
Avoid eating bush meat	
Yes	11 (2.8)
No	389 (97.2)
Going for special prayer	
Yes	7 (1.8)
No	393 (98.2)
Bathing with salt water	
Yes	2 (0.5)
No	398 (99.5)
By not participating in burial rites of a person that died of COVID-19	
Yes	377 (94.3)
No	23 (5.7)

Table 4: Sources of information about COVID-19.

Variables	Frequency (%)
Radio	
Yes	371 (92.8)
No	29 (7.2)
Television	
Yes	377 (94.3)
No	23 (5.7)
Newspaper	
Yes	288 (72.0)
No	112 (28.0)
Health educator	
Yes	320 (80.0)
No	80 (20.0)
Town announcer	
Yes	216 (54.0)
No	184 (46.0)
Mosque	
Yes	214 (53.5)
No	186 (46.5)
Church	
Yes	269 (67.3)
No	131 (32.7)
Family member	
Yes	200 (50.0)
No	200 (50.0)
Peers	
Yes	149 (37.3)
No	251 (62.7)
Health facility	
Yes	298 (74.5)
No	102 (25.5)
Fliers	
Yes	143 (35.8)
No	257 (64.3)
Social media (Facebook, Twitter, WhatsApp)	
Yes	35 (8.8)
No	365 (91.2)
GSM/SMS	
Yes	226 (56.5)
No	174 (43.5)
Market	
Yes	201 (50.3)
No	199 (49.7)

Knowledge of cure and prevention of COVID-19

Majority (89.3%) of the respondents knew that there is no cure for the virus. Common preventive practices known by the respondents were not to touch person with suspected COVID-19 (97.8%), hand washing with soap and water (90.3%) and social distances (90.3%) as shown in Table 3.

Sources of information about COVID-19

The major source of information about COVID-19 was the television (94.3%) closely followed by radio (92.8%). Interestingly, the social media (Facebook, Twitter, WhatsApp) (8.8%) was the least source of information. This is seen in Table 4.

Table 5: The attitude of respondents to COVID-19.

Variables	Frequency (%)
COVID-19 is a problem in Nigeria	
Agree	383 (95.7)
Disagree	17 (4.3)
It is being exaggerated	
Agree	9 (2.3)
Disagree	391 (97.7)
People want to make money out of it	
Agree	9 (2.3)
Disagree	391 (97.7)
There are only few cases	
Agree	7 (1.8)
Disagree	393 (98.2)
It is a deadly disease	
Agree	352 (88.0)
Disagree	48 (12.0)
It has no cure	
Agree	242 (60.5)
Disagree	158 (39.5)
It is highly infectious	
Agree	378 (94.5)
Disagree	22 (5.5)
It is an attack by the western world	
Agree	30 (7.5)
Disagree	370 (92.5)
It creates a lot of panic	
Agree	339 (84.7)
Disagree	61 (15.3)
I can contract COVID-19	
Agree	250 (62.5)
Disagree	150 (37.5)
Government measures in curbing the spread is inadequate	
Agree	282 (70.5)
Disagree	118 (29.5)

Attitude of respondents regarding COVID-19

Three hundred and fifty-one (87.8%) of the respondents had positive attitude regarding COVID-19 infection while 49 (12.2%) had poor attitude. The mean level of attitude of the respondents towards COVID-19 infection was 5.9 (1.2).

The attitude of respondents to COVID-19

Three hundred and eighty-three (95.7%) agreed that COVID-19 is a problem in Nigeria majorly because it is highly infectious (94.5%) and deadly (88.0%). Almost three-quarters (70.5%) believed that government is not doing enough to contain the spread of the disease. This is shown in Table 5.

The preventive practices of respondents towards COVID-19 infection

More than three-quarter (76.5%) of the respondents had good preventive practices towards COVID-19 infection (Figure 1). The mean level of preventive practices of the respondents towards COVID-19 infection was 10.5 (1.5).

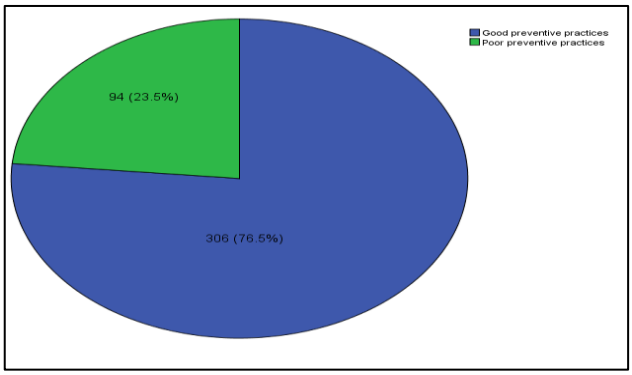

Figure 1: Respondents' preventive practices against COVID-19.

Table 6: Preventive practices of respondents to COVID-19.

Variables	Frequency (%)
Adherence to C0VID-19 guidelines	
Yes	270 (67.5)
No	130 (32.5)
Washing of hands	
Yes	316 (79.0)
No	84 (21.0)
Wearing of face mask	
Yes	316 (79.0)
No	84 (21.0)
Avoidance of social gathering	
Yes	187 (46.8)
No	213 (53.2)
Avoidance of handshake	
Yes	181 (45.2)
No	219 (54.8)
Use of hand sanitizer	
Yes	320 (80.0)
No	80 (20.0)

Preventive practices of respondents to COVID-19

Table 6 shows that two-third (67.5%) adhere to COVID-19 guidelines with washing of hand, wearing face mask (79.0%) and use of hand sanitizer (80.0%) being the major preventive practices done.

Relationship between knowledge/attitude and preventive practices of COVID-19

The relationship between the knowledge and preventive practices of the respondents towards COVID-19 infection was statistically significant (χ^2=29.072, p=0.000). Similarly, the relationship between the attitude and preventive practices of the respondents towards COVID-19 infection was statistically significant (χ^2=35.156, p=0.000). This is shown in Table 7.

Factors associated with adherence to COVID-19 guideline

Table 8 showed the factors associated with adherence to COVID-19 guideline among respondents. The level of education of respondents (χ^2=5.256; p=0.022) was the only factor that had an association which was statistically significant with adherence to COVID-19 guideline among respondents.

Table 7: Relationship between knowledge/attitude and preventive practices of COVID-19.

Variables	Good practices n (%)	Poor practices n (%)	Total	Statistical indices
Knowledge				
Good knowledge	185 (87.3)	27 (12.7)	212 (100.0)	χ^2 = 29.07
Poor knowledge	121 (64.4)	67 (35.6)	188 (100.0)	p =0.000, df =1
Attitude				
Positive attitude	285 (81.2)	66 (18.8)	351 (100.0)	χ^2 = 35.156
Negative attitude	21 (42.9)	28 (57.1)	49 (100.0)	p=0.000, df=1

Table 8: Factors associated with adherence to COVID-19 guideline.

Variables (n=400)	Adherence to COVID-19 guideline		Statistical indices
	Yes n (%)	No n (%)	
Age (years)			
19-40	175 (66.8)	87 (33.2)	χ^2=0.173; df=1
41-61	95 (68.8)	43 (31.2)	p=0.678
Sex			
Male	62 (68.1)	29 (31.9)	χ^2=0.021; df=1
Female	208 (67.3)	101 (32.7)	P=0.884
Profession			
Professionals	49 (63.6)	28 (36.4)	χ^2=0.649; df=1
Non professionals	221 (68.4)	102 (31.6)	p=0.421
Religion			
Christianity	239 (68.5)	110 (31.5)	χ^2=1.202; df=1
Islam	31 (60.8)	20 (39.2)	p=0.273
Level of education			
Basic	124 (73.8)	44 (26.2)	χ^2=5.256; df=1
Tertiary	146 (62.9)	86 (37.1)	p=0.022
Ethnicity			
Yoruba	246 (66.7)	123 (33.3)	χ^2=1.507; df=1
Non-Yoruba	24 (77.4)	7 (22.6)	p=0.220
Knowledge			
Good	135 (63.7)	77 (36.3)	χ^2=3.002; df=1
Poor	135 (71.8)	53 (28.2)	p=0.083
Attitude			
Positive	236 (67.2)	115 (32.8)	χ^2=0.091; df=1
Negative	34 (69.4)	15 (30.6)	p=0.763

Binary logistic regression of respondents' characteristics and COVID-19 preventive practices

The predictors of good preventive practices were knowledge and attitude. The odd ratio of knowledge was 3.8 which means that there is a 3.8 times higher likelihood of those with good knowledge executing good preventive practices compared to those with poor knowledge, similarly the odd ratio of attitude was 5.8 which means that there is a 5.8 times higher likelihood of those with positive attitude ensuring good preventive practices compared to those with negative attitude. This is seen in Table 9.

Table 9: Binary logistic regression of respondents' characteristics and COVID-19 preventive practices.

Variables	Odd ratio	95% CI		P value
		Lower limit	Upper limit	
Age (years)				
19-40	0.974	0.598	1.585	0.915
41-61	1.000			
Gender				
Male	1.215	0.688	2.144	0.502
Female	1.000			
Profession				
Professionals	1.214	0.662	2.226	0.531
Non professionals	1.000			
Level of education				
Basic	0.867	0.544	1.381	0.547
Tertiary	1.000			
Religion				
Christian	1.766	0.936	3.332	0.076
Islam	1.000			
Ethnicity				
Yoruba	0.766	0.305	1.928	0.571
Non-Yoruba	1.000			
Knowledge				
Good	3.794	2.296	6.269	0.000
Poor	1.000			
Attitude				
Positive	5.758	3.079	10.767	0.000
Negative	1.000			

DISCUSSION

The study was conducted to determine the Corona virus-19 (COVID-19) preventive practices among primary health workers in Owo Local Government Area, Ondo State, Nigeria. All the respondents who participated in this present study were aged 19-61 years with a mean age of 37.1 (8.1) years, this was similar to studies done in Kano, Northern Nigeria with a mean age of 35.5 (7.9) years, Anambra, South East Nigeria with age range of 19-64 and mean age of 36.7 (9.5) years, Ghana with mean age of 31.6 (5.1) years and Saudi Arabia with mean age of 35.6 (9.7) years.[22-25] The similarity in the mean age and range was probably due to the working age of the respondents in the public primary health care centres since all the studies were done in government primary health care centres. This was however different from the mean age of 26.0 (2.0) years reported in a study among tertiary health care workers in Pakistan.[26]

The major age range among the respondents in the present study was similar to the major age range in a study done in Ghana, Kano and other part of Nigeria.[22,24,27] This finding of the major age range being the same could probably be due to the active working age group of the respondents in all the study centres.

In the present study, the highest level of education of most respondents was tertiary level of education which was in concordance with the study done in Kano, Anambra, Ghana, China and Saudi these was because the level of knowledge of the healthcare worker is important in ensuring good and adequate health care for the patient.[22-25,28] The majority of the respondents in the present study were female which was similar to study done in Anambra and Ghana but males were the major respondents in the study done in Kano, Sokoto, and Saudi Arabia.[22-25,29] The difference in the gender could be because the Islamic dominated states do not allow females professionals in centres where male care is needed.

The present study showed that majority of the respondents were aware of COVID-19 infection and had good level of knowledge about COVID-19 infection. The awareness of COVID-19 in the present study was similar to the level of awareness in studies reported in Northern Nigeria, Anambra, South East Nigeria, Uganda and China but higher than studies reported from Ghana, Saudi, Pakistan and Bangladesh.[15,22-25,28-31] The variation in the knowledge of the healthcare workers could be due to the information dissemination about COVID-19 and readiness of the respondents to receive information. The significant of disseminating correct, appropriate and timely information especially during emergencies is important in building capacity and improving the performance of healthcare workers.

Majority of the respondents in the present study are aware that close contact with infected person is a risk factor for COVID-19 which was similar to what was reported in studies in Saudi Arabia, China and Kano.[22,25,28] Also, all respondents in the present study are aware of preventive measures against COVID-19 which was similarly reported in Kano and China.[22,28] The awareness of use of hand sanitizer and handwashing in the prevention of COVID-19 in the present study was almost 100% which was similar to studies in Kano, Ghana and China.[22,24,28] The main source of information in the present study was radio and television while social media as a source of information was conspicuously low. This is similar to what was reported in a study in Saudi Arabia where radio and television were the main source of information.[25] Contrary to our study is other study in Nigeria where

social media and television were the main source of information.[27] The source of information in the present study is due to the availability of television and radio in all homes of the respondents which are readily accessible for information.

The present study showed that most of the respondents had positive attitude regarding COVID-19 which was higher than studies reported in Anambra, South-East Nigeria, Kano, Northern Nigeria, Ghana, Uganda, Pakistan, Bangladesh and Saudi Arabia.[15,22-25,30,31] It was however similar to other studies done in other part of Nigeria.[27,29] The increase positive attitude could be due to the high acceptability of the respondents and in the readiness to curb the spread of the disease in this community.

The mean level of attitude of the respondents in the present study was similar to what was reported in a study in Kano, Saudi Arabia and other part of Nigeria.[22,25,27] Majority of the respondents in the present study perceived that COVID-19 is a major concern in Nigeria because it is highly infectious and deadly. This was also the perception in the study in Saudi Arabia where majority perceived that it has a high risk of infectivity.[25] Also, study in Kano reported high infectivity as a major perception of the health workers.[22] The present study finding is not different from what was reported in Ghana where the increase infectivity and spread was a major concern.[24]

The preventive practices towards COVID-19 among the respondents in the present study was high which was similar to what was reported in China and Pakistan but higher than other studies in Nigeria, Ghana and Bangladesh.[22-24,28,29,31,32] The respondents personal and environmental characteristics could account for the high preventive practices in this present study. The receptive attitude of the primary healthcare workers compare to tertiary healthcare workers could also account for the high preventive practices observed in the present study. Similarly, the proximity of the primary healthcare workers to the community could increase the preventive practices of the primary health care workers. The period in which the present study was done could also account for the high preventive practices adopted, as the present study was done later than the other studies during which awareness of COVID-19 would have increased.

The major preventive practices among the respondents in the present study were hand washing, wearing of face mask and use of hand sanitizer which was similar to what was reported in other studies in Nigeria, Ghana and Saudi Arabia.[22-25,27,29] In the present study, respondents agreed that apart from washing of hands, wearing of face masks and use of hand sanitizers that social distancing, self-isolation of infected person, avoidance of hand shake and avoid touching of nose, mouth and eyes are other means of preventing the spread of COVID-19. This was consistent with studies reported from Pakistan and China.[26,33] Adoption of preventive practices is the only solution to defeat the COVID-19 now as there is no specific cure for the disease.[34] The preventive practices adopted by the respondents in the present study were appreciable. The mean preventive practice in the present study was similar to what was reported in Ghana, Kano, Sokoto and China.[322,24,29,33]

Knowledge and attitude do not provide desired outcome for control and prevention of diseases without adequate practices. The present study showed that knowledge and attitude were associated with preventive practices and were predictive factors of preventive practices. The finding was similar to what was reported in study done in Sokoto and Pakistan but contrary to what was reported in Kano, Northern Nigeria, Anambra, South East Nigeria and Ghana where only knowledge but not attitude was related to practices.[22-24,29,32] The healthcare workers with positive attitude are likely to seek knowledge and then put the knowledge into practice.

The present study showed that level of education was the only factor that was associated with adherence to COVID-19 guidelines. This could be because the more educated respondents were likely to seek more information on COVID-19 or may have been directly involved in the care of patients. It could also be that the information behaviour of educated respondents could be influenced by their positive attitudes towards what others feel about their actions. The findings are similar to what was reported in Kano, Northern Nigeria[22] where level of education was a factor to COVID-19 guideline adherence.[22] Studies in Saudi Arabia demonstrated profession, gender, educational level and availability of infection prevention control department in the workplace as factors affecting COVID-19 adherence.[35,36] In South-East Nigeria, lack of personal protective equipment, fear of dying are factors affecting COVID-19 guideline adherence.[23] While in Ghana, age, gender and professions were factors affecting COVID-19 guideline adherence and in Sokoto,[29] gender and profession were factors affecting COVID-19 guideline adherence.[24,29] Despite the encouraging findings of the knowledge, attitude and practices of healthcare workers towards COVID-19, it is noteworthy that risk of the infection may still be high and its control largely dependent on the adherence to preventive practices. Healthcare workers should observe precautionary measures in managing patients, work overload, stress and degree of occupational exposure as these increases the risk of getting infected.

The study is limited by the fact that some respondents could have given a socially acceptable answers to some questions. However, this study could be used as a guide in planning and implementing interventions aimed at controlling epidemics in the study location.

CONCLUSION

In conclusion, the good knowledge about COVID-19 was high among primary healthcare workers and was

reflective in the high positive attitude regarding COVID-19 which thereby translate to a good preventive practice. Education was a factor that was associated with adherence to COVID-19 guideline and therefore, there is need for continuous professional education. There is also the need to sustain the increase knowledge of the primary healthcare workers as it leads to the acceptability and adoption of the COVID-19 guideline which is highly pertinent and vital in preventive practices since there is no cure for COVID-19 presently.

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