

Knowledge, perception and preventive practices of COVID-19 among Primary Health Care workers in Ogun State, Nigeria

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Abstract

Objective: This study was carried out to determine the COVID-19 knowledge, perception, and preventive practices among primary health care workers in Ogun state.

Methods: A descriptive cross-sectional study was carried out among 339 primary health care workers in Ogun state using self-administered questionnaires. Knowledge of COVID-19 was graded as good with a minimum score of 75% while perception was graded as good with a score greater than the mean scores. Preventive practices were categorized as good with minimum scores of 75%. Associations between knowledge, practice, and categorical variables were assessed using the chi-square test with the level of significance set at $p < 0.05$

Results: The mean age of respondents was 42.30 ± 8.73 years. The major source of information on COVID-19 was health training (99.7%). A total of 50.7% had good knowledge of COVID-19 while 42.8% had a good perception of COVID-19. The majority (92.9%) had good COVID-19 preventive practices. Length of years in service was significantly associated ($p=0.024$) with knowledge of COVID-19.

Conclusion: About half of the health care workers had good knowledge of COVID-19 while the perception of COVID-19 was poor. However, preventive practices carried out among the healthcare workers were good. Efforts should be made to further improve the knowledge and perception of primary health care workers as they play a vital role in the delivery of health care services in the state.

Keywords: COVID-19, knowledge, perception, preventive practices, health care workers

Plain English summary

COVID-19 came into the global picture in January 2020 and health care workers needed to respond immediately to contain the spread of the disease. Therefore, there is a need to assess the COVID-19 knowledge, perception, and preventive practices among healthcare workers to ensure that they do not aid the spread of the disease by their lack of knowledge which could make them prone to misinforming the public. This study set out to assess the knowledge, perception, and preventive practices of COVID-19 among primary health care workers in Ogun state. It was a study done at a specific point in time among 339 primary health care workers. From the study, the average age of the respondents was 42.30 ± 8.73 years. The major source of information on COVID-19 for respondents was health training. A total of 50.7% had good knowledge of COVID-19 while 42.8% had a good perception of COVID-19. The majority (92.9%) had good COVID-19 preventive practices. In conclusion, about half of the health care workers had good knowledge of COVID-19 while the perception of COVID-19 was poor. However, a preventive practice carried out among the healthcare workers was good. Efforts should be made to further improve the knowledge and perception of primary health care workers as they play a vital role in the delivery of health care services in the state.

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Background

Severe Acute Respiratory Disease Syndrome Coronavirus-2 (SARS-CoV-2) is a new form of coronavirus which was first reported in December 2019 following the occurrence of several cases of atypical pneumonia in the city of Wuhan in China. The virus has been confirmed to cause a form of illness known as COVID-19 (1). The World Health Organization declared the disease a public health emergency on January 30, 2020, and a pandemic by March 11, 2020 (2).

As of 28th June 2021, there were 180,654,652 confirmed cases globally and 3,920,463 deaths with the Americas being the most affected having slightly less than 50% of all the confirmed cases and the Western Pacific is the least affected with < 2% of confirmed cases. Africa is the second least affected with less than 4 million confirmed cases of the disease (3). As at that time, Nigeria had 167,467 confirmed cases and 2,119 deaths with the highest number of cases in Lagos state. Ogun state which is near Lagos had 4,684 cases and 51 deaths recorded (4).

The transmission of the disease was initially thought to be from animals to humans and thereafter human-to-human transmission has been reported. The latter occurs through direct, indirect, or close contact with people through infected secretions or respiratory droplets (5, 6). Airborne transmission can occur during medical procedures that generate aerosols even though it is not yet clear if it occurs in the absence of such procedures (5, 6). Transmission may also occur indirectly through touching surfaces that are contaminated with the virus in the immediate environment of an infected person. Although the virus has been detected in other biological samples such as urine and feces of some patients, there has been no published report of its transmission via feces or urine (5, 6).

COVID-19 usually presents with symptoms such as fever, fatigue, dry cough, malaise, and difficulty in breathing (7). Regular hand washing, social distancing, and respiratory hygiene such as covering the mouth and nose when coughing and sneezing are some of the primary preventive measures against the disease (8, 9).

Health care workers are very important stakeholders in the prevention and control of diseases within the healthcare settings and as agents of change within the community in which they live. They are likely to perform these roles effectively when they are armed with sufficient knowledge about the disease and how to

prevent the spread of the disease both in the health care setting and in the community. Some studies have shown that health care workers have poor knowledge of the transmission of COVID-19. This is compounded with the recent infodemic around the COVID-19 epidemic (10, 11).

Primary Health Care (PHC) is the entry point to the nation's health care system and as such health care workers at this level come in contact with suspected or asymptomatic cases of COVID-19 in the course of their daily work activities which puts them at a high risk of exposure to the virus. Currently, there is no widely accepted treatment for the disease and this makes prevention of the disease crucial to its control. Therefore, a lack of understanding of the disease and how to prevent it will place the health care workers at risk of infection, and if infected can transmit the infection to members of their family and the community at large. In addition, there may be a delay in prompt diagnosis and subsequent management or referral of such patients suspected of having the virus if health care workers lack adequate information and a high index of suspicion for the disease.

At the onset of the pandemic in Nigeria, the Ogun State Government in collaboration with partners such as World Health Organization (WHO) and Nigeria Centre for Disease Control (NCDC) organized training for health care workers to strengthen preventive strategies and raise awareness of the disease. This study is important in a setting like the COVID-19 pandemic to understand health care workers' knowledge especially with rapid turnover of information within a context of ongoing misinformation about the disease. Hence this study aimed to assess the knowledge, perception, and preventive practices of COVID-19 among primary health care workers in Ogun State.

Methods

Study area and study period

This study was carried out in Ogun East Senatorial District in Ogun State, Nigeria between January and April 2021. Ogun State is located in southwest Nigeria. It has a total land area of 16,409.26sq.km. Its boundaries are Oyo and Osun States in the North, Ondo State in the East, Lagos in the South, and Republic of Benin in the West. The Capital of Ogun State is Abeokuta which lies about 100 km north of Lagos, Nigeria's business capital. The projected population of the State is 3,728,098 disaggregated into 1,847,243 males and

1,880,855 females according to the national census carried out in 2006. The main ethnic group in the state is the Yoruba ethnic group of Nigeria.

The state has 20 local government Areas and is divided into three (3) senatorial districts: Ogun East, Ogun Central, and Ogun West. The state has two (2) federal tertiary hospitals, one (1) state tertiary hospital, thirty-nine (39) public secondary health facilities, four hundred and fifty (450) primary health facilities, one (1) private tertiary facility, and nine hundred and four (904) private health facilities. Ogun East senatorial district comprises of 9 LGAs; Sagamu, Ikenne, Remo North, Odogbolu, Ijebu North, Ijebu North East, Ijebu Ode, Ijebu East, and Ogun Waterside

Study design

This study was a descriptive cross-sectional study.

Study population

Health care workers in primary health centers in Ogun East Senatorial District.

Sample size and sampling method

A total of 339 respondents were recruited for the study. Participants were selected using a two-stage sampling method. The first step was the selection of five Local Government Areas out of 9 using a simple random sampling method. Next, four Primary Health Care facilities were selected from within each selected Local Government by simple random sampling. Every primary health care staff available at the time of the study were then recruited.

Data collection

Data were collected using a self-administered, semi-structured questionnaire made up of three sections. The first section contained questions on sociodemographic characteristics of the participants while the second, third, and fourth sections consisted of questions on knowledge, perception, and preventive practices of COVID-19 respectively. The questionnaires were

pretested among health workers in another senatorial district within Ogun state before administration and adjustments were made where needed.

Measurements

Knowledge of COVID-19 was measured using 13 items. Each correct item was coded as '1' while an incorrect answer was coded as '0'. The total score was calculated (range 0-13) and categorized. Respondents who had scores \leq 75% were considered as having poor knowledge. while those with scores above 75% were considered as having good knowledge.

Perception of COVID-19 was measured using 13 items. These were answered using a 5-point Likert scale: strongly agree, agree, not sure, disagree, strongly disagree. These were scored from five (strongly agree) to one strongly disagree for positively worded questions. Negatively worded questions were recoded to ensure adequate scoring. Higher values indicated good perception. The cumulative perception score was then computed (range 13-65). Respondents who scored \leq mean score were categorized as having poor perception while those who scored above the mean score were categorized as having good perception.

The practice of COVID-19 prevention methods was measured using 12 items with 'Yes', 'No', or 'Sometimes' as answers. A score of '2' was given for a 'Yes', '0' for 'No' and '1' for 'Sometimes'. The total practice score was computed (range 0-24). Respondents with scores of $<$ 75% were categorized as poor practice while those with scores \geq 75% were categorized as good practice.

Data Analysis

Data collected was cleaned and analyzed using IBM SPSS Statistics for Windows, Version 20. Results were presented as tables and charts. Descriptive analysis was done for variables as necessary. Chi-square was used for the bivariate analysis of variables with the level of significance set at $p < 0.05$.

Results

Table 1: Sociodemographic characteristics

Variable	Frequency	Percentage
Age group		
<45	196	57.8
\geq 45	143	42.2
Mean = 42.30 \pm 8.73		
Sex		
Male	43	12.7
Female	296	87.3
Marital status		

Single	43	12.7
Married	277	81.7
Divorced/separated/widowed	19	5.6
Family type (n=330)		
Monogamous	249	75.5
Polygamous	81	24.5
Educational Level		
Primary	8	2.4
Secondary	25	7.4
Tertiary	306	90.3
Tribe		
Yoruba	322	95.0
Igbo	9	2.7
Hausa	6	1.8
Others	2	0.5
Religion		
Christianity	273	80.5
Islam	61	18.0
Others	5	1.5
Occupation		
Doctor	6	1.8
Nurse	30	8.8
Community Health Extension Worker	143	42.2
Environmental Health Officer	42	12.4
Others	118	34.8
Service years		
≤ 10 years	98	28.9
11-20 years	150	44.2
>20 years	91	26.8
Mean service years = 15.69 ± 8.32		
Attended Covid training		
Yes	241	71.1
No	98	28.9

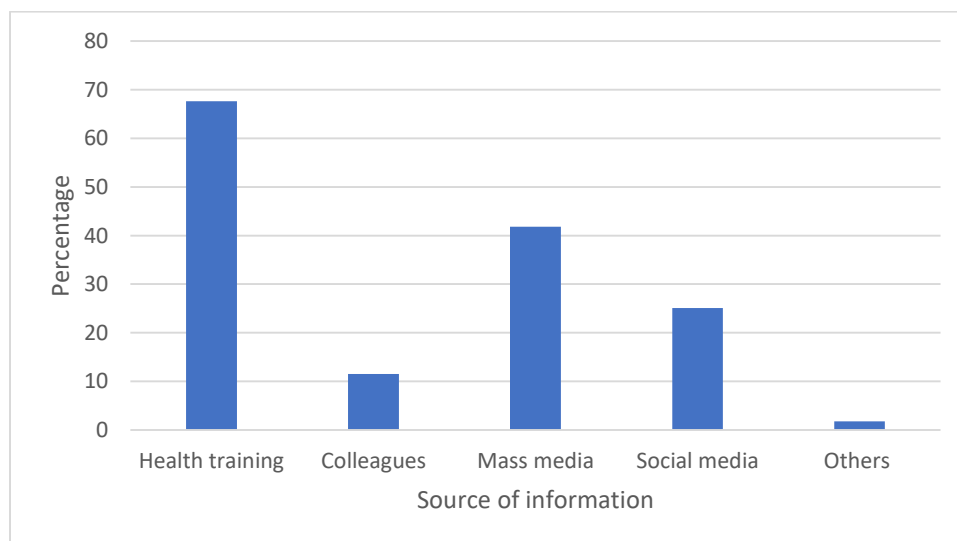


Figure 1: Source of information on COVID-19

Table 1 shows the sociodemographic characteristics of the respondents. Over half of them were aged ≤42 years with the majority of them being females (87.3%). About three-quarters of the respondents were married and 73.5% were from a monogamous family. Most

participants had tertiary-level education with a large number being Christians. More than half of them (71.1%) had attended a COVID-19 training with 70.1% having attended training that lasted for less than one week.

The majority of the respondents got their information from health training (67.6%)

followed by mass media (41.8%), social media (25.1%), and colleagues (11.5%).

Table 2a: Knowledge of COVID-19 among primary health care workers

Variables N = 339	Frequency	Percentage
What is the cause of COVID-19?		
Bacteria	17	5.0
Fungi	1	0.3
Virus	309	91.2
I don't know	12	3.5
*How is COVID-19 transmitted?		
Air droplets (from patient sneezing or coughing)	272	80.2
Mosquitoes/flies	2	0.6
Contact with contaminated surfaces	163	48.1
Close contact with people who have the virus	214	63.1
How long does it take from contacting the disease to the showing of symptoms (Incubation period)?		
Less than 7 days	53	15.6
1-14 days	206	60.8
2-21 days	13	3.8
I don't know	67	19.8
*Which is a symptom of COVID-19?		
Fever	330	97.3
Runny nose	282	83.2
Dry cough	306	90.3
Breathing difficulty	324	95.6
Muscle pain	161	47.5
Fatigue	162	47.8
Bleeding	41	12.1
Who can get infected with COVID-19?		
Old people only	5	1.5
Young adults only	4	1.2
Anyone can be infected	330	97.3
Is it possible for a COVID-19 positive person to show no symptoms?		
Yes	246	72.6
No	81	23.9
I don't know	12	3.5

*Multiple responses allowed

Table 2b: Knowledge of COVID-19 among primary health care workers

Variable N = 339	Frequency	Percentage
*What can kill the organism that causes COVID-19?		
Diluted chlorine	217	64.0
Alcohol based sanitizers	314	92.6
Soap/detergents	287	84.7
Water alone	2	0.6
I don't know	4	1.2
Is handwashing important in the prevention of COVID-19?		
Yes	339	100
If Yes, how long should you wash your hands to kill the organism causing COVID-19?		
Less than 20 secs	93	27.4
20secs to 60 secs	210	61.9
I don't know	36	10.6
Does COVID-19 have a cure?		
Yes	248	73.2
No	87	25.7
I don't know	4	1.2

*If Yes, what is the cure?		
Chloroquine	95	28.0
Antibiotics	92	27.1
Drinking hot water	94	27.7
Drinking hot ginger/turmeric	70	20.6
Drinking alcohol	8	2.4
Other (specify	34	10.0
Is there a vaccine for COVID-19?		
Yes	162	47.8
No	76	22.4
I don't know	101	29.8

*Multiple responses allowed

Knowledge of COVID-19

Almost all (99.7%) of the respondents had heard about COVID-19. Tables 2a and b show the knowledge of COVID-19 among respondents. A total of 309(91.2%) correctly identified the cause of the disease with 60.8% identifying the incubation period for the disease. About three quarters correctly identified the mode of transmission as air droplets while 63.1% identified close contact with people who

have the virus as a mode of transmission. Only 48.1% were aware that COVID-19 could be transmitted via contact with contaminated surfaces. For overall knowledge, the mean score was 9.35 ± 1.32 with the least score being 4 and the maximum score 12. Out of 339 respondents, 49.3% had poor knowledge and 50.7% had good knowledge concerning COVID-19.

Table 3: Perception of COVID-19

Variable	Strongly agree n (%)	Agree n (%)	Not sure n (%)	Disagree n (%)	Strongly disagree n (%)
COVID-19 is a deadly disease	225 (66.4)	92 (27.1)	9 (2.7)	5 (1.5)	8 (2.4)
I am at risk of contracting COVID-19	107 (31.6)	130 (38.3)	28 (8.3)	52 (15.3)	22 (6.5)
COVID-19 is highly infectious	197 (58.1)	120 (35.4)	20 (5.9)	2 (0.6)	
COVID-19 infection is just being exaggerated	25 (7.4)	22 (6.5)	30 (8.8)	138 (40.7)	124 (36.6)
I don't believe COVID-19 infection exists	11 (3.2)	17 (5.0)	12 (3.5)	132 (38.9)	167 (49.3)
COVID-19 infection is an intention for corruption by the government	17 (5.0)	21 (6.2)	37 (10.9)	172 (50.7)	92 (27.1)
Even in areas experiencing outbreaks, meat products can be safely consumed if these items are cooked thoroughly and properly handled during food preparation	98 (28.9)	139 (41.0)	57 (16.8)	35 (10.3)	10 (2.9)
If anyone has a fever, cough, and difficulty in breathing, COVID-19 should be suspected	229 (67.6)	92 (27.1)		7 (2.1)	11 (3.2)
As per WHO guidelines for COVID-19, you only need to wash your hands when they are visibly dirty	56 (16.5)	40 (11.8)	10 (2.9)	97 (28.6)	136 (40.1)
The use of facemask is important in preventing COVID-19 infection	236 (69.6)	93 (27.4)	4 (1.2)	4 (1.2)	2 (0.6)
Social distancing is important in preventing COVID-19 infection	240 (70.8)	91 (26.8)	6 (1.8)		2 (0.6)
Strict infection control policy is important in preventing COVID-19 in	190 (56.0)	108 (31.9)	24 (7.1)	12 (3.5)	5 (1.5)
Vaccines are not needed in the control of COVID-19 in Nigeria	23 (6.8)	35 (10.3)	52 (15.3)	120 (35.4)	109 (32.2)

Perception of COVID-19

Table 3 shows respondents' perception of COVID-19. Over half of the respondents strongly agreed that COVID-19 is a deadly

disease while only 31.6% and 38.3% strongly agreed or agreed that they were at risk of contracting the disease. Less than 10% of the respondents strongly agreed that COVID-19 is

just being exaggerated and 5% strongly believed that COVID-19 is an intention for corruption by the government. Overall, the mean perception score was 32.64 with minimum and maximum scores of 17 and 47

respectively. A total of 194 (57.2%) respondents had a poor perception of COVID-19 while the remaining respondents had a good perception of COVID-19.

Table 4: Practice of COVID-19 prevention measures

Variable	Always n (%)	Sometimes n (%)	Not at all n (%)
Educate your patients about COVID-19	316 (93.2)	21 (6.2)	2 (0.6)
Use facemasks in crowds	326 (96.2)	13 (3.8)	0 (0.0)
Cover your nose and mouth with a tissue during sneezing or coughing	297 (87.6)	16 (4.7)	26 (7.7)
Avoid touching your eyes, nose, or mouth as far as you can	301 (88.8)	33 (9.7)	5 (1.5)
Use soap or hand sanitizer to wash your hands regularly	315 (92.9)	21 (6.2)	3 (0.9)
Throw used tissue in the trash	288 (85)	26 (7.7)	25 (7.4)
Practice social distancing as recommended	308 (90.9)	29 (8.6)	2 (0.6)
Strictly follow national/state protocol for triage and isolation of suspected COVID-19 cases	299 (88.2)	30 (8.8)	10 (2.9)
Disinfect tables and working rooms before and after work	280 (82.6)	42 (12.4)	17 (5.0)
Ensure that patients are adequately spaced while giving health education or waiting to be attended to	312 (96.2)	15 (4.4)	8 (2.4)
Have a holding area for isolation of suspected COVID-19 cases	260 (76.7)	20 (5.9)	59 (17.4)
Ensure that all patients wear facemask before entering your facility or being attended to by health workers	318 (93.8)	18 (5.3)	3 (0.9)
Have IEC materials for educating patients on COVID-19 in your facility	250 (73.7)	21 (6.2)	68 (20.1)
Have a copy of the national/state protocols or guidelines for triage and isolation of suspected COVID-19 cases in your facility	229 (67.6)	13 (3.8)	97 (28.6)
Are you willing to take the COVID-19 vaccine when available?	200 (59.0)	7 (2.1)	132 (38.9)

*IEC: Information, Education, and Communication

The practice of COVID-19 preventive measures
Table 4 shows the practice of COVID-19 preventive measures. The majority of the respondents (93.2%) educate their patients about COVID-19 and 96.2% use facemasks in crowds. Only 76.7% have a holding area for the isolation of suspected COVID-19 cases. Just a little over half (59.0%) were willing to take the COVID-19 vaccine when available. Overall, the mean practice score was 22.22±2.79 with

minimum and maximum scores of 12 and 24 respectively. The majority (92.9%) had good practice while 7.1% had poor practice.

In addition, almost all (98.2%) of the respondents had the necessary personal protective equipment. The most readily available personal protective wear was the face mask (96.5%). Personal protective equipment was provided by 67.8% of the respondents themselves.

Table 5: Factors affecting knowledge of COVID-19

Variable (N=339)	Knowledge		χ ²	p value
	Poor n (%)	Good n (%)		
Age group				
<45	104(62.3)	92(53.5)		
≥45	63(37.7)	80(46.5)	2.683	0.101
Sex				
Male	20(12.0)	23(13.4)		
Female	147(88.0)	149(86.6)	0.149	0.699
Marital status				
Single	22(13.2)	21(12.2)		

Married	135(80.8)	142(82.6)		
Separated/Divorced/widowed	10(6.0)	9(5.2)	0.179	0.914
Family type (n=330)				
Monogamous	119(72.3)	130(78.3)		
Polygamous	45(27.7)	36(21.7)	1.474	0.225
Educational Level				
Primary/secondary	20(12.0)	13(7.6)		
Tertiary	147(88.0)	159(92.4)	1.882	0.170
Tribe				
Yoruba	157(94.0)	165(95.9)		
Others	10(6.0)	7(4.1)	0.655	0.418
Religion				
Christianity	131(78.4)	142(82.6)		
Others	36(21.6)	30(17.4)	0.915	0.339
Occupation				
Doctor/Nurse	13(7.8)	23(13.4)		
Community Health Extension Workers	76(45.5)	67(39.0)		
Environmental Health Officers	24(14.4)	18(10.5)		
Others	54(32.3)	64(37.2)	4.976	0.174
Service years				
≤ 10 years	50(29.9)	48(27.9)		
11-20 years	83(49.7)	67(39.0)		
>20 years	34(20.4)	57(33.1)	7.489	0.024*
Attended Covid training				
Yes	113(67.7)	128(74.4)		
No	54(32.3)	44(25.6)	1.881	0.170
Duration of covid training=241				
<1 week	95(84.1)	113(88.3)		
≥1 week	18(15.9)	15(11.7)	0.900	0.343

*Significant association

Length of years in service was significantly associated with knowledge of COVID-19 ($X^2=10.404$; p value=0.0034) with those who have been in service between 11-20 years more likely to have good knowledge.

Discussion

Health care workers play a critical role in the prevention and control of epidemic diseases including COVID-19. Their role as frontline workers responding to the epidemic and source of health information in the community where they reside make them a vital stakeholder in the control of the current COVID-19 pandemic, more especially at the primary health care level which is the entry point into the country's health care system.

Only about half of the respondents in this study had good knowledge of COVID-19. This is however higher than 9.3% reported in a study of community health workers in a rural area in Cross-River State, Nigeria (11). The higher level of knowledge obtained in this current study could be because the respondents in the study were made up of health care workers from both urban and rural areas who had been exposed to training on COVID-19 both by government and other non-governmental

organizations as a result of the rapid response to the emerging pandemic in the state.

The finding from this study is, however, lower than 88.59%, 90% and 83.7% (12, 13, 14) reported in Anambra State, Bayelsa State, and Kano State, Nigeria respectively. These studies could be biased because the respondents were selected from web-based participants who were likely to have access to other health information on the web as a result of their activity. Similarly, studies conducted among health workers in Nepal and China reported that 63.2% and 88.4% had good knowledge of COVID-19 (15, 16). This could be attributed to the fact that some of these studies were carried out in tertiary facilities with better infrastructure, access to information, training, and continuing medical education which may not be readily available at the primary health care level of the health care system. In addition, the categories of healthcare workers interviewed in these other studies were more nurses and physicians compared to community health extension workers in this study.

This current study found an association between the length of years spent in service by the healthcare worker and the level of knowledge on COVID-19 ($p = 0.024$), with those

who had been in service for more than 10 years more likely to have a good level of knowledge compared to those who had spent fewer years in service. This could be because in practice, people in higher cadres are more likely to be sent for training on emerging issues and this perhaps could have resulted in them developing networks whereby, they have access to current information relevant to health compared to people in lower cadres.

A study done in Kano State, identified marital status, professional categorization, and type of health facility as factors associated with good knowledge among respondents. Respondents who were divorced had 90% less knowledge compared to those who were single and doctors were the most knowledgeable. The study also reported that respondents working in the tertiary facilities were most knowledgeable about COVID-19. However, the study did not find any association between age, gender, highest qualification, and knowledge of COVID-19 (12). Similarly, a study carried out in Bayelsa state reported an association between knowledge scores and category of health workers with nurses and doctors having a significantly higher knowledge score compared to other health workers. It also identified that respondents who were younger than 30 years old had higher mean scores compared to those who were older and this was statistically significant (13). In consonance with the current study, both studies did not find any association between age, gender, highest qualification, and knowledge of COVID-19.

Good perception of the risk of COVID-19 was recorded among 42.8% of the respondents. It is, however, lower than 78.9% reported in Kano State (12). About 32% and 38% of the respondents strongly agreed and agreed respectively that they were at risk of contracting COVID-19. This is similar to what was reported in Addis Ababa, Ethiopia where 43% and 30% strongly agreed and agreed that they were at risk of contracting COVID-19 (14). The low level of good risk perception reported in this current study is quite worrisome considering that the health workers are expected to be the agents of change in the communities where they work.

The majority (92.9%) of the respondents in this study had good preventive practices towards the virus. This is higher than 77.6% reported in Kano State (12) and 81.39% reported in Anambra State (15). The finding is similar to studies conducted in Addis Ababa and China (14, 16) where the majority of the respondents had high levels of preventive practice towards COVID-19. The high level of good preventive practice in this current study could be attributed

to the fact that more than half (68%) of the respondents thought that they were at risk of contracting COVID-19 and this perhaps made them willing to protect themselves from being infected with the virus by providing personal protective equipment for themselves even when their employers did not provide such. This study, however, did not find any association between preventive practices and sociodemographic risk factors though some studies have reported an association between knowledge of COVID-19 and good preventive practices among healthcare workers (12, 13, 14).

Conclusion

In conclusion, only about half of the respondents had good knowledge of COVID-19 with a poor perception rate. The majority had good practices to prevent themselves from contracting the disease. Efforts should be made to further improve the knowledge of primary health care workers as they play a vital role in the delivery of health care services, especially in this period of the ongoing COVID-19 pandemic. The government needs to provide adequate personal protective equipment for health care workers to discharge their responsibility without the fear of being infected or infecting members of their families.

List of abbreviations

CHEW: Community Health Extension Workers
LGA: Local Government Area
NCDC: Nigeria Centre for Disease Control
WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Ministry of Health Ogun State (HPRS/381/354 dated 28/01/2021) before the commencement of the research. In addition, permission was sought from the heads of the facilities used for the study. Informed consent was obtained from each of the participants before administering the questionnaires. The questionnaire was translated to Yoruba which is the predominant language in Ogun East Senatorial district for better understanding and translated back to English to ensure that the original meaning was retained. The information obtained had no identifier that could link the information back to the participants.

Consent for publication

The authors hereby give consent for the publication of our work under the creative

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Competing Interests

There is no competing interest.

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Authors' Contributions

Conceptualization and study design: DO, BJ, GA

Data collection: BJ, GA, OA, AO

Data analysis: DO, BJ, OA, AO

Study supervision: DO, BJ, GA

Manuscript writing: DO, BJ, GA, OA, AO

Revision of manuscript for intellectual content: DO, BJ, GA

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