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 ($\chi^2=29.072, p<0.001$), attitude ($\chi^2=35.156, p<0.001$) and practice ($\chi^2=23.923, p<0.001$).

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. The virus was first reported in Wuhan, China in December 2019 among patients with viral pneumonia symptoms. The virus causing COVID-19 spread mainly from person to person through respiratory droplets produced when an infected person coughs or sneezes. 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. 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. There is no antiviral curative treatment that has been recommended for treatment of COVID-19.

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. 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. As of 22 June, 2021, more than 178.7 million cases have been reported globally with more than 3.87 million confirmed deaths. 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.

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. Like any other health events, healthcare workers are seen to have an increased risk of infection because of the regular encounters with infected persons. 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. 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. 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.

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. 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. 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)
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<sup>A</sup>           | 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    |

<sup>A</sup>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                                                                       | 362 (90.5)    |
| No                                                                        | 38 (9.5)      |
| 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)    |

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

| Variables                                      | Frequency (%) |
|------------------------------------------------|---------------|
| Adherence to COVID-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)     |

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).
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 ($\chi^2=29.072, p=0.000$). Similarly, the relationship between the attitude and preventive practices of the respondents towards COVID-19 infection was statistically significant ($\chi^2=35.156, p=0.000$). 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 ($\chi^2=5.256; p=0.022$) was the only factor that had an association which was statistically significant with adherence to COVID-19 guideline among respondents.

### Table 6: 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)| $\chi^2=29.07$     |
| Poor knowledge | 121 (64.4)           | 67 (35.6)            | 188 (100.0)| $p=0.000, df=1$    |
| Attitude       |                       |                       |           |                     |
| Positive       | 285 (81.2)           | 66 (18.8)            | 351 (100.0)| $\chi^2=35.156$   |
| Negative       | 21 (42.9)            | 28 (57.1)            | 49 (100.0) | $p=0.000, df=1$    |

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

| Variables (n=400) | Adherence to COVID-19 guideline | Statistical indices |
|-------------------|---------------------------------|---------------------|
|                   | Yes n (%) | No n (%) | $\chi^2$ | df | p  |
| Age (years)       |            |           |         |    |    |
| 19-40             | 175 (66.8) | 87 (33.2) | 0.173 | 1  | 0.678 |
| 41-61             | 95 (68.8)  | 43 (31.2) | 0.021 | 1  | 0.884 |
| Sex               |            |           |         |    |    |
| Male              | 62 (68.1)  | 29 (31.9) | 0.649 | 1  | 0.421 |
| Female            | 208 (67.3)| 101 (32.7)|         |    |      |
| Profession        |            |           |         |    |    |
| Professionals     | 49 (63.6)  | 28 (36.4) | 1.022 | 1  | 0.273 |
| Non professionals | 221 (68.4)| 102 (31.6)|         |    |      |
| Religion          |            |           |         |    |    |
| Christianity      | 239 (68.5)| 110 (31.5)|         |    |      |
| Islam             | 31 (60.8)  | 20 (39.2) | 1.202 | 1  | 0.273 |
| Level of education|            |           |         |    |    |
| Basic             | 124 (73.8)| 44 (26.2) | 5.256 | 1  | 0.022 |
| Tertiary          | 146 (62.9)| 86 (37.1) |         |    |      |
| Ethnicity         |            |           |         |    |    |
| Yoruba            | 246 (66.7)| 123 (33.3)|         |    |      |
| Non-Yoruba        | 24 (77.4) | 7 (22.6)  | 1.507 | 1  | 0.220 |
| Knowledge         |            |           |         |    |    |
| Good              | 135 (63.7)| 77 (36.3) | 3.002 | 1  | 0.083 |
| Poor              | 135 (71.8)| 53 (28.2) |         |    |      |
| Attitude          |            |           |         |    |    |
| Positive          | 236 (67.2)| 115 (32.8)|         |    |      |
| Negative          | 34 (69.4) | 15 (30.6) | 0.91 | 1  | 0.363 |
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.

| 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     |               |         |         |         |
| 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.22,24,25 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.22-23,29 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

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social media and television were the main source of information. 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. It was however similar to other studies done in other part of Nigeria. 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. 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. Also, study in Kano reported high infectivity as a major perception of the health workers. The present study finding is not different from what was reported in Ghana where the increase infectivity and spread was a major concern.

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. 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. 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. Adoption of preventive practices is the only solution to defeat the COVID-19 now as there is no specific cure for the disease. 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.

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. 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 where level of education was a factor to COVID-19 guideline adherence. 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. In South-East Nigeria, lack of personal protective equipment, fear of dying are factors affecting COVID-19 guideline adherence. While in Ghana, age, gender and professions were factors affecting COVID-19 guideline adherence and in Sokoto, gender and profession were factors affecting COVID-19 guideline adherence. 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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REFERENCES

1. Mayo Clinic. Coronavirus disease 2019 (COVID-19)- Symptoms and causes. 2020. Available from: https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963. Accessed on 14 May 2021.
2. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020;382:727-33.
3. Harapan H, Naoya I, Amanda Y, Wira W, Synat K, Haypheng T, et al. Coronavirus disease 2019 (COVID-19): A literature review. Journal of Infection and Public Health. 202;13(5):667-3.
4. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. J Med Virol. 2020;92:401-2.
5. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med. 2020;382:1199-207.
6. Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ, et al. Presymptomatic transmission of SARS-CoV-2- Singapore. Morbid Mortal Week Rep. 2020:69(14):411-5.
7. Sahin AR, Erdogan A, Aagolugu PM, Dineri Y, Cakirci AY, Senel ME, et al. 2019 novel coronavirus (COVID-19) outbreak: a review of the current literature. EJMO. 2020;4:1-7.
8. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int J Biol Sci. 2020;16(10):1745.
9. Munster VJ, Koopmans M, van Doremalen N, van Riel D, de Wit E. A novel coronavirus emerging in China- key questions for impact assessment. N Engl J Med. 2020;382(8):692-4.
10. World Health Organization (WHO). Coronavirus disease (COVID-19) pandemic outbreak situation. 2020. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/g/outbreaksituation/. Accessed on 8 April 2021.
11. World Health Organization. WHO announces COVID-19 outbreak a Pandemic, 2020. Available from: http://www.euro.who.int/en/health-topics/health-emergencies/coronaviruscovid19/. Accessed on 8 April 2021.
12. Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). COVID-19 Dashboard. 2020. Available from: https://www.arcgis.com/apps/dashboards/bd7594740fd40299423467b48e9ecf6. Accessed on 27 June 2021.
13. Nigerian Centre for disease control (NCDC). 203 new cases of COVID 19 Nigeria, 2021. Available from: https://www.worldometers.info/coronavirus/country/nigeria/. Accessed on 27 June 2021.
14. Abuja T, Austrian K, Isaac A, Kangwana B, Mbushi F, Mulve E. et al. COVID-19-related knowledge, attitudes, and practices in urban slums in Nairobi. Kenya: Study description. Population Council, 2020.
15. Olum RCG, Wekha G, Nassozi DR, Bongomin F. Coronavirus disease-2019: knowledge, attitude, and practices of health care workers at Makerere University Teaching Hospitals, Uganda. Front Public Health. 2020;8(4):1-15.
16. Bhagavathula AS, Aldhalee WA, Rahmani J, Mahabadi MA, Bandari DK. Novel coronavirus (COVID-19) knowledge and perceptions: a survey on healthcare workers. MedRxiv. 2020:1-1:15.
17. World Health Organisation. Coronavirus Disease (COVID-19) Outbreak: Rights, Roles and Responsibilities of Health Workers, including Key Considerations for Occupational Safety and Health, 2020. Available from: http://www.who.int/publications-detail/coronavirus-disease-(covid-19). Accessed on 5 April 2021.
18. MedScape. In Memoriam: Healthcare Workers Who Have Died of COVID-19. Available from: http://www.medscape.com/viewarticle/927976. Accessed on 6 April 2021.
19. World Health Organisation. Emerging respiratory viruses, including COVID-19: methods for detection, prevention, response and control. Available from: http://www.openwho.org/courses/introduction-to-ncov. Accessed 28 April 2021.
20. The office of the Executive Governor of the Ondo State. The official website of Ondo State, 2018. Available from: https://ondostate.gov.ng/index.php/contact/. Accessed 20 June 2021.
21. Suresh KP, Chandrashekara S. Sample size estimation and power analysis for clinical research studies. J Hum Reprod Sci. 2012; 5:7-13.
22. Tsiga-Ahmed FI, Amole TG, Musa BM, Nalado AM, Agoyi OB, Galadanci HS, et al. COVID-19: Evaluating the knowledge, attitude and preventive practices of healthcare workers in Northern Nigeria. Int J Mch Aids. 2021;10(1):88-97.
23. Mbachu CNP, Azubuike CM, Mbachu II, Ndukwu CI, Ezeuko AY, Udigwe IB, et al. COVID-19 infection: Knowledge, attitude, practices, and impact among healthcare workers in a South-Eastern Nigerian State. J Infect Dev Countries. 2020;14(9):943-52.
24. Serwaa D, Appiah AB, Wodag-Seme R, Nkansah C, Ahiatrogah S. Knowledge, perception and practices regarding novel coronavirus among sample of Ghanaian healthcare workers: a cross-sectional study. Int J Community Med Public Health. 2021;8(3):1072-81.
25. Rabbani U, Al Saigul AM. Knowledge, attitude and practices of health care workers about corona virus disease 2019 in Saudi Arabia. J Epidemiol Glob Health. 2021;11(1):60-8.
26. Hussaini I, Majeed A, Imran I, Ullah M, Hashmi FK, Saeed H, et al. Knowledge, attitude and practices towards COVID-19 in primary healthcare providers: A cross-sectional study from three tertiary care hospitals of Peshawar, Pakistan. J Community Health. 2021;46:441-9.
27. Ejeh FE, Saidu AS, Owoicho S, Maurice NA, Jauro S, Madukaji L, et al. Knowledge, attitude and practice among health care workers towards COVID-19 outbreak in Nigeria. CellPress. 2020;6(11):e05557.
28. Huynh G, Nguyen TNH, Tran VK, Vo KN, Vo VT, Pham LA. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pac J Trop Med. 2020;13:260-5.
29. Oche MO, Adamu H, Yahaya M, Raji IA, Illo HG, Kontagora ZA, et al. Knowledge, attitude and practices related to COVID-19 prevention among health care workers in Sokoto Metropolis, Nigeria. Int J Trop Dis Health. 2020;41(23):44-61.
30. Ahmed N, Shakoor M, Vohra F, Abduljabbar T, Mariam Q, Rehman MA, et al. Knowledge, awareness and practice of health care professionals amid SARS-CoV-2, Corona virus disease outbreak. Pak J Med Sci. 2020;36 (COVID19-S4):S49-56.
31. Paul A, Sikdar D, Hossain MM, Amin MR, Deeba F, Mahanta J, et al. Knowledge, attitudes, and practices toward the novel coronavirus among Bangladeshis: Implications for mitigation measures. PLoS One. 2020;15(9):e0238492.
32. Saqlain M, Munir MM, Rehman SU, Gulzar A, Naz S, Ahmed Z, et al. Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. J Hosp Infect. 2020;105:419-23.
33. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int J Biol Sci. 2020;16(10):1745.
34. Adhikari SP, Meng S, Wu YJ, Mao YP, Ye RX, Wang QZ, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: A scoping review. Infect Dis Poverty. 2020;9(1):1-12.
35. Al Sulayyim HJ, Al-Noaemi MC, Rajab SM, Doghiri HA, Al Yami SM, Al-Rashah AS, et al. An assessment of healthcare workers knowledge about COVID-19. Open J Epidemiol. 2020;10:220-34.
36. Nooh HZ, Alshammary RH, Alenezy JM, Abrowaili NH, Alsharari AJ, Alenzi NM, et al. Public Awareness of Coronavirus in Al-Jouf Region, Saudi Arabia. J Public Health. 2020;12:1-8.

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