

# A Cross-Sectional Study on Oyo State Health Care Worker's Knowledge, Attitude and Practice regarding Corona Virus Disease 2019 (COVID-19)

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## Abstract

**Background:** Health workers are at the front line of the COVID-19 outbreak response and as such are exposed to hazards that put them at risk of infection. Poor knowledge among HCWs and inadequate infection control practices may lead to the increased risk of COVID-19 nosocomial transmission. This study assessed the knowledge, attitude and practice of Oyo state health care workers on COVID-19 as part of emergency preparedness. **Methods:** A hospital based cross-sectional survey was conducted in selected health facilities in Oyo State, Nigeria. A total of 350 HCWs were assessed for the knowledge, attitudes and practices on COVID-19 using a semi-structured questionnaire. Multivariate analysis was conducted to identify predictors of good knowledge at 95% confidence interval with Epi-info software. **Results:** The level of good knowledge on COVID-19 was 78.6% and positive attitude was 64% among the respondents. Majority of respondents practice safe measures in the prevention of COVID-19 including washing of hands (95.3%), routine cleaning (82.7%) and high-level disinfection (83.9%). However, use of personal protective equipment (PPE) was low (56.8%). Predictors of good knowledge on COVID-19 were being a female HCW [Adjusted Odd's Ratio (AOR) = 6.5 95% CI 1.0 - 17.2], ≥10 years length in service [AOR = 5.2 95% CI 2.7 - 18.9] and being a secondary or tertiary facility [AOR = 3.6 95%CI 1.7 - 32.2]. **Conclusions:** Overall knowledge and attitude were satisfactory however the practices of HCWs on the use of personal protective equipment were

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not satisfactory. Effective infection control measures including regular skill-based training and/or orientation for all categories of HCWs can improve infection control practices in health facilities.

### **Keywords**

Health Care Workers, Knowledge, Attitudes and Practices, COVID-19, Oyo State

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## **1. Introduction**

Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans.

Coronaviruses are zoonotic, meaning they are transmitted between animals and people. Detailed investigations found that SARS-CoV was transmitted from civet cats to humans and MERS-CoV from dromedary camels to humans. Several known coronaviruses are circulating in animals that have not yet infected humans.

Person-to-person spread of COVID-19 appears to occur mainly by respiratory transmission. How easily the virus is transmitted between persons is currently unclear. Signs and symptoms of COVID-19 include fever, cough, and shortness of breath [1]. Based on the incubation period of illness for Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) coronaviruses, as well as observational data from reports of travel-related COVID-19, CDC estimates that symptoms of COVID-19 occur within 2 - 14 days after exposure. Preliminary data suggest that older adults and persons with underlying health conditions or compromised immune systems might be at greater risk for severe illness from this virus [2]. Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

The WHO declared the outbreak to be a Public Health Emergency of International Concern on 30 January, 2020 and presently the virus has spread across all the continents except Antarctica. Standard recommendations to prevent infection spread include regular hand washing, covering mouth and nose when coughing and sneezing, thoroughly cooking meat and eggs. Avoid close contact with anyone showing symptoms of respiratory illness such as coughing and sneezing [3].

The nature of health care workers job puts them at an increased risk of catching any communicable disease, including COVID-19. During the SARS outbreak in 2002, one-fifth of all cases were in health care workers. If they start to get sick

in high numbers during a disease outbreak, it amplifies the already high levels of strain on the health care system. That's why it's so important that they have good knowledge on how to identify patients, isolate and use protective equipment correctly. Personal protective equipment (PPE), like masks, gloves, and gowns, help keep nurses and doctors safe when they're treating patients with infectious diseases like COVID-19. To protect against the new virus, the Centers for Disease Control and Prevention (CDC) recommends that health care workers wear N95 masks, which filter out airborne particles and tiny droplets that may have been coughed up by patients. Those masks only protect health care workers if they're used properly, though. They must be fitted, worn, and removed in a specific way [4]. We conducted this study to assess knowledge, attitude and practice of health care workers on COVID-19 in selected health facilities in Oyo State, South West, Nigeria.

## **2. Methods**

### **2.1. Study Area and Design**

This study formed part of the emergency preparedness for COVID-19 before the confirmation of cases in Oyo State. This was a cross-sectional study conducted between February and March 2020 at eight randomly selected secondary and primary health care facilities in Oyo State. There are 1560 health facilities distributed across different levels in Oyo State: Federal-2, State-4, Local-667 and registered private/mission-887.

### **2.2. Sample Size Determination and Sampling**

To determine the sample size for this study, the following parameters was used; prevalence of 0.5% since there is no previous study on COVID-19, power of 80%, 95% confidence interval and precision of 5% to arrive at a minimum sample size of 350.

A two-stage sampling technique was used. Eight health facilities were randomly selected from Government owned facilities. Staff records in each of the hospital was obtained as sampling frame. Proportional allocation of questionnaire was done based on the number of staff in each health facility. For each facility, respondents were selected systematically using appropriate sampling interval until the desired sample size was achieved.

### **2.3. Data Collection**

Data was collected using a semi-structured questionnaire that comprised of four sections: 1) socio-demographic characteristics; 2) knowledge about the Corona Virus Disease-19; 3) attitudes towards the Corona Virus Disease-19 control 4) practice of infection prevention control against COVID-19. Questionnaire content was pretested among 20 HCWs in a health facility different from the selected ones for this study and appropriate adjustment was made as necessary. Three research assistants were trained on the final questionnaire and mobilised

for the data collection. They were regularly monitored and supervised during the data collection process.

## 2.4. Data Management

All completed questionnaires were cross-checked and edited on the same day and before data entry to ensure data consistency and completeness. All recorded data were coded and entered in Epi Data. Analyses were performed using Epi-Info software version 7. Descriptive statistics was conducted to generate frequencies, proportions and means to summarize the socio-demographic characteristics of the health care workers and bivariate analyses were used to measure the association between HCW's Knowledge and socio-demographic variables at 95% confidence interval using crude odd's ratio. To identify predictors of good knowledge multivariate analysis was conducted at  $p < 0.05$ . HCWs' knowledge variables were scored and respondents answering  $\geq 70\%$  of the knowledge questions correctly were considered as having good level of knowledge and others were considered to have poor knowledge. The attitude variables comprised of 10 statements with response categories "Strongly Agree", "Agree", "Neither Agree nor Disagree", "Disagree" or "Strongly Disagree". These were recoded as:

- 1) Strongly agree and agree = Agree.
- 2) Neither agree nor disagree = Uncertain.
- 3) Strongly disagree and Disagree = Disagree.

Composite scores were calculated and those scoring  $\geq 70\%$  were considered as having positive attitudes towards COVID-19 control. The cut-off points for knowledge and attitude levels were set as informed by similar studies [5] [6].

## 2.5. Ethical Considerations

Ethical approval (AD13/479/1769B) was obtained from Ethical Review and Research ethics Committee of Oyo State Ministry of Health. Informed consent was obtained, and confidentiality of the information provided was maintained.

## 3. Results

### 3.1. Socio-Demographic Characteristics of the Health Care Workers

**Table 1** shows the socio-demographic characteristics of the health care workers. The mean age was  $48.5 \pm 7.0$  and 52.6% were female. The average length of year in service was  $13 \pm 6$  and 40.9% were Nurses. Christianity accounted for the most practiced religion (72%) among respondents and 86.0% were married.

### 3.2. Knowledge

**Table 2** shows the respondents level of knowledge on COVID-19 disease. Majority of the health care workers knew the cause of COVID-19 (90%), its spread (99%), sign and symptoms (95%) however, with respect to prevention only half of the respondents (54.7%) see staying at home as a containment measure at re-

ducing spread of the disease and 27% believed that face mask can prevent someone from contracting COVID-19. More than two-third (78.6%) of the health care workers in Oyo State had good knowledge on COVID-19.

### 3.3. Attitude

**Table 3** shows the attitude of HCWs towards COVID-19 prevention. Overall, 64.9% had positive attitude towards COVID-19. The bivariate analysis showed significant relationship between respondents' good knowledge of COVID-19 and their positive attitudinal disposition (COR = 2.1 95% CI (1.3 - 18.4) at p-value less than 0.05.

**Table 1.** Socio-demographic characteristics of health care workers in Oyo State 2020.

Variable	Frequency (n = 350)	Percentage
<b>Age(years)</b>		
20 - 29	5	1.5
30 - 39	40	11.4
40 - 49	122	34.8
≥50	183	52.3
<b>Mean age 48.5 ± 7.0</b>		
<b>Sex</b>		
Male	166	47.4
Female	184	52.6
<b>Designation</b>		
Nurses	143	40.9
CHO&CHEWs	93	26.5
Doctors	83	23.7
Others(health attendant/ward maid)	31	8.8
<b>Length of year in service</b>		
>10 years	182	53.7
5 - 10 years	121	34.6
<5 years	41	11.7
<b>Type of facility</b>		
Primary	222	63.4
Secondary	94	26.9
Tertiary	33	9.4
<b>Marital Status</b>		
Single	33	9.4
Married	301	86.0
Divorced/Widow(er)	16	4.6
<b>Religion</b>		
Islam	98	28.0
Christianity	252	72.0

Others are ward maid, record attendant and pharmacist.

**Table 2.** Knowledge of health care workers on COVID-19 (n = 350).

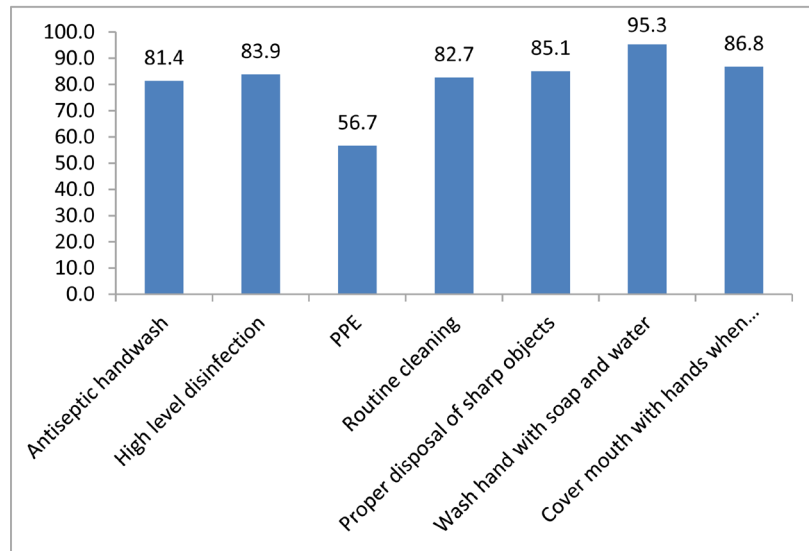
Knowledge Questions	Correct Responses (%)
SARs COV-2 is the virus and the disease are COVID-19	310 (88.6)
COVID-19 is spread from person to person	340 (97.1)
Gloves cannot provide complete protection against transmission of COVID-19	290 (82.9)
Washing hands with soap or use of an alcohol-based antiseptic decreases the risk of transmission of COVID-19	327 (93.4)
Someone who has been released from COVID-19 quarantine is not considered a risk for spreading the virus to others	222 (63.4)
Some of the symptoms of COVID-19 are fever, cough, and difficulty breathing, myalgia, fatigue, nausea, and diarrhea	326 (93.1)
You should maintain 1 - 1.5 meters distance between you and anyone that is coughing and sneezing	326 (93.1)
If you feel unwell with symptoms such as fever, cough and difficulty in breathing you should stay indoors	203 (58.0)
Face mask prevent the transmission of COVID from a case to another person	292 (83.4)
Face mask prevent someone from contracting COVID-19 infection	58 (16.6)

**Table 3.** Attitude of HCWs towards COVID-19 prevention.

Statement	Agree (%)	Uncertain (%)	Disagrees (%)
I think Nigerian government will contain COVID-19 outbreak	167 (47.7)	81 (23.1)	102 (29.1)
Government should ban all flights coming from all countries with confirmed cases of COVID-19	148 (42.3)	153 (43.7)	49 (14.0)
I think schools should be shut down to prevent spread of COVID-19	225 (64.3)	18 (5.1)	107 (30.6)
If I see anyone from China, I should run away	220 (62.9)	57 (16.3)	72 (20.6)
I think Government should ban public gathering in Nigeria for now to prevent spread of COVID 19	250 (71.5)	10 (2.9)	90 (25.7)
I think COVID-19 is a form of biological war fare	194 (55.4)	61 (17.4)	95 (27.1)
I think bathing with onion water can prevent me from having COVID-19	149 (42.6)	170 (48.6)	31 (8.9)
I think people are anxious about COVID-19 outbreak	196 (56.0)	116 (33.1)	38 (10.9)
I feel outbreak of COVID-19 can lead to breakdown of essential services in the hospital	227 (64.9)	19 (5.4)	104 (29.7)
I feel health care workers in Nigeria are not capable of managing COVID-19 cases	195 (55.7)	113 (32.3)	42 (12.0)

### 3.4. Practice

As shown in **Figure 1**, Majority of respondents practice safe measures in the prevention of COVID-19 including washing of hands (95.3%), routine cleaning (82.7%) and high-level disinfection (83.9%). However, use of personal protective equipment (PPE) was low (56.8%).



**Figure 1.** Practice of HCWs on COVID-19 prevention.

**Table 4.** Predictors of HCWs Good Knowledge on COVID-19.

Variables	Good Knowledge	Poor Knowledge	OR	AOR
<b>Age (years)</b>				
<40	40 (14.5)	5 (6.8)	1	1
≥40	236 (85.5)	69 (93.2)	1.8 (0.56 - 3.19)	1.4 (0.75 - 3.36)
<b>Sex</b>				
Male	126 (45.8)	40 (53.3)	1	1
Female	149 (54.2)	35 (46.7)	3.5 (1.9 - 31.1)*	6.5 (1.0 - 17.2)*
<b>Designation</b>				
CHEW & Others	87 (31.6)	37 (49.3)	1	1
Doctor & Nurse	188 (68.4)	38 (50.7)	1.3 (0.4 - 5.0)	0.1 (0.1 - 1.9)
<b>Length of years in service</b>				
<10 years	126 (45.8)	41 (54.7)	1	1
≥10 years	149 (54.2)	34 (45.3)	3.7 (2.5 - 10.1)	5.2 (2.7 - 18.9)
<b>Marital Status</b>				
Single & Divorced	39 (14.2)	10 (13.3)	1	1
Married	236 (85.8)	65 (86.7)	1.1 (0.3 - 4.20)	2.0 (0.5 - 8.9)
<b>Type of facility</b>				
Primary	143 (52.0)	33 (44.0)	1	1
Secondary & Tertiary	132 (48.0)	42 (56.0)	1.4 (0.9 - 10.2)	3.6 (1.7 - 32.2)*
<b>Religion</b>				
Christianity	71 (25.8)	48 (64.0)	1	1
Islam	204 (74.2)	27 (36.0)	1.20 (0.1 - 4.2)	0.3 (0.1 - 1.1)

\*means significant at p-value < 0.05.

### 3.5. Predictors of HCWs Good Knowledge on COVID-19

The identified predictors of Good knowledge on COVID-19 were being a female AOR = 6.5 (1.0 - 17.2), length of years in service ≥ 10 years AOR = 5.2 (2.7 - 18.9) and working in a secondary or tertiary institutions AOR = 3.6 (1.7 - 32.2) as shown in **Table 4**.

## 4. Discussion

Knowledge is a prerequisite for establishing prevention beliefs, forming positive attitudes, and promoting positive behaviours. Individuals' cognition and attitudes towards disease affect the effectiveness of their coping strategies and behaviours to a certain extent [7]. This study similarly found that knowledge directly affected attitudes.

The COVID-19 outbreak is considered an emergency and healthcare workers are seen to have an increased risk of infection while there is limited investigation of the knowledge, attitude and practice of healthcare workers towards the COVID-19. Several thousand health-care workers have been affected already worldwide. Therefore, it is important to avoid hospital spread of the disease [8].

The findings in our study showed that HCWs had a high level of knowledge and a positive attitude towards the COVID-19 outbreak as also observed in a study in China [9]. We found that most of the respondents know that COVID-19 is a global issue but were not too keen on the ban of public gathering and shutting down of schools as a preventive measure. This shows that the HCWs need to be educated further on mode of spread and prevention of the disease. These findings further suggested that education for HCW on the mode of transmission and prevention is very important.

The study further highlighted the fact that majority of HCWs know and practice safe measures in the prevention of COVID-19 but use of personal protective equipment (PPE) was low (56.8%). This was because they were not available at the different facilities. Other studies showed that an important reason for early infection among general ward medical staff was that patients were admitted to the ward without protective measures in place. In contrast, infection rates in the more well-protected ICU and emergency departments were lower in cases with no early warning of the disease [10].

We also analysed the characteristics of KAP towards COVID-19 and identified some demographic factors associated with KAP; these finds observed that occupation was significantly associated with knowledge. Doctors and nurses showed relatively more knowledge. Additionally, good knowledge has a higher probability of positive attitudes, this result has not previously been described [11]. The goals of the upcoming educational program should focus on the HCWs with insufficient knowledge and this should improve the rate of positive attitudes of HCWs. Also, provision of PPE and training on its use for all HCW will further prevent the spread of COVID-19 among HCW.

This study had some limitations in interpreting the results because COVID-19 is a novel coronavirus and limited research has been studied to compare. Future studies could estimate the knowledge and attitude of HCWs on a larger scale to be able to design appropriate interventions at the national level.

## 5. Conclusion

The findings showed the majority of HCWs had good knowledge and positive



attitude toward COVID19, but there are some lower knowledge and negative attitudes than expected. Additional education intervention and campaigns are required for HCWs to avail them with the knowledge of the mode of transmission, the isolation period and treatment strategies, as well as the risk of personal and family infection with COVID-19.

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### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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