

## Perspective of Different Cadres of Non-Clinical Healthcare Workers on COVID 19 in Bingham University Teaching Hospital, Jos, Nigeria

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author MS designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors HS and AN managed the analyses of the study. Author AN managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** COVID-19 is a disease that can be transmitted through air droplets. The knowledge of infection control is important among Health Care Workers (HCW). A lot has been done to educate clinical HCW about the disease, leaving out non-clinical HCW.

**Objective:** To determine COVID-19 knowledge, attitudes, and practice among the different cadre of non-clinical HCW in Bingham University Teaching Hospital (BHUTH) Jos.

**Design:** Cross-sectional study.

**Results:** The average score on knowledge of non-clinical HCW was good with 75% of the

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questions answered correctly. However, some questions on knowledge were poor with 17% correctly answered. The score on attitude of the workers was average with 65% of the questions on attitude answered correctly, while about 80% of the question on practice was answered correctly. Similarly, some questions on attitude and practice scores were poor with 40% and 46% respectively. There was no significant difference in the scores on knowledge between the different cadre of non-clinical HCW ( $F=1.5$ ,  $P=0.23$ ). Comparably, there was also no difference in the scores on practice between the different cadre of non-clinical HCW ( $F=1.1$ ,  $P=0.34$ ). However, there was a significant difference in the scores on attitude between the different cadre of non-clinical HCW ( $F=3.54$ ,  $P=0.02$ ). The box plots on knowledge scores were similar among the different non-clinical health care workers. The physiotherapist/Lab technologist had the highest score in attitude among the non-clinical HCW, they also had the highest minimum score in practice.

**Conclusion:** The study showed that the knowledge of non-clinical workers on COVID-19 in the hospital was good in some knowledge questions and poor in other questions. The attitude and practice of the non-clinical HCW was better among the physiotherapist/lab technologist compared to other non- HCW.

*Keywords: Knowledge; attitude; practice; non-clinical; HCW; COVID-19.*

## 1. INTRODUCTION

The Coronavirus diseases 2019 (COVID-19) is a global pandemic first detected in Wuhan, China in December of 2019 [1]. It belongs to a family of Coronaviruses known to cause respiratory symptoms in man and gastroenteritis in other animals [2-3]. COVID-19 is caused by SARS-CoV-2 virus, a novel virus which shares more than two thirds of its genetic sequence with the SARS-CoV virus which was responsible for the 2002-2003 SARS epidemic that had a 10% mortality rate [4-6].

Since its first detection in 2019, COVID-19 has spread to more than 200 countries and provinces infecting more than 45 million individuals with more than 1,000, 000 deaths globally, with Africa having more than 1.3 million cases and more than 29, 000 deaths as at 1<sup>st</sup> November[7]. The first case of the disease in Nigeria was confirmed on February 27, 2020 in Lagos [8]. Since then, Nigeria has recorded more than 62, 000 cases with more than 1,000 deaths involving all the states in the country including the Federal Capital Territory [7]. Plateau State recorded its first case of the disease on April 23, 2020 and has since had more than 3,000 cases with 33 deaths by 17<sup>th</sup> of October, making it the 3rd highest state with Covid-19 after Lagos and the Federal Capital Territory (FCT) Abuja [9].

The World Health Organization provided guidelines to curtail and prevent the spread of the disease. These include regular cleaning of hands with an alcohol-based hand sanitizer or thorough hand washing with soap and water,

maintaining physical distancing of at least 2 meters (6 feet), avoidance of crowded places, practice of proper respiratory hygiene and use of face masks, and self-isolation when symptomatic [10]. Various countries-imposed lockdown measures and restriction of movement in a bid to prevent further spread of the disease [11]. In Nigeria, schools, places of worship and markets were all shutdown to prevent community transmission [12].

Studies have shown that good knowledge of a disease has important bearing on the attitude and practice of the people towards the disease [1,13]. Assessing the knowledge, attitude and practice of HCW have been focused more on clinical HCW, the results of studies done on clinical and non-clinical HCW by Huynh et al and Modi et al showed that clinical HCW had better knowledge scores than their non-medical counterparts [14-15].

The rate of infection among the non-clinical HCW has been shown to be higher than the clinical HCW according to a study done by Lai et al in China. The incidence of infection was significantly higher among the non- firstline HCWs than that of the other HCW groups 1.6% (93 Of 6574) vs 0.5% (17 Of 3110):  $P < 0.001$  [16].

The knowledge, attitude and practice of a people towards COVID-19 determines the readiness of the society to partner with the government in containing the disease [11]. A lot of attention has been placed on clinical health care workers, who are front liners across the globe in ensuring that they are prepared and equipped to some extent to contain the disease. However, not so much is

emphasized about non-clinical health care workers especially in our setting, hence the need for this study. Therefore, this study aims to assess the knowledge, attitudes, and practice among the different cadre of non-clinical HCW in Bingham University Teaching Hospital (BHUTH) Jos regarding COVID-19.

## 2. METHODS

### 2.1 Study Design

A cross sectional descriptive study design was used.

### 2.2 Study Population

Non-clinical health care workers in Bingham University Teaching Hospital (BHUTH).

### 2.3 Sampling Method

A consecutive sampling of all non-clinical health care workers who participated to the study was done until sample size of 67 was obtained.

### 2.4 Data Collection

The questionnaire was adopted and modified from the study done by Zhong et al in China [1]. A face validity of the questionnaire was conducted by experts in the field. The questionnaires were distributed by the researcher and the research assistants who were doctors in the hospital. The study was conducted from 1st of April to 30th May 2020.

### 2.5 Measures

A convenience system was used to designate scores: 0 to < 49% - poor, 50 to < 70% - moderate/average and  $\geq 70\%$  - good scores.

### 2.6 Sample Size Calculation

$$N = Z^2 P(1-P)/d^2$$

Description:

N = required sample size.

Z = confidence level at 95% (standard value of 1.96).

P = P value of 95% [16].

d = margin of error at 5% (standard value of 0.05).

Attrition rate of 5% = 9.

The calculated sample size was 58 non-clinical HCW.

The total sample size collected was 67.

## 2.7 Statistical Analysis

Statistical Analysis was done using SPSS version 20.0. quantitative data are expressed as means and standard deviations while qualitative data are expressed as proportions. Analysis of Variance (ANOVA) was used to test for relationships. Results were expressed in figures, tables and graphs. A P-value of less than 0.05 was considered statistically significant in comparative analysis.

Each correct answer to the knowledge, attitude and practice were scored 2 points, 1 point for I don't know and 0 for incorrect answers. The maximum score for Knowledge, attitude and practice were 24, 18 and 12 respectively. Scores of  $\geq 80\%$  are very good, 50-79% moderate, 0 to < 50% is poor.

## 3. RESULTS

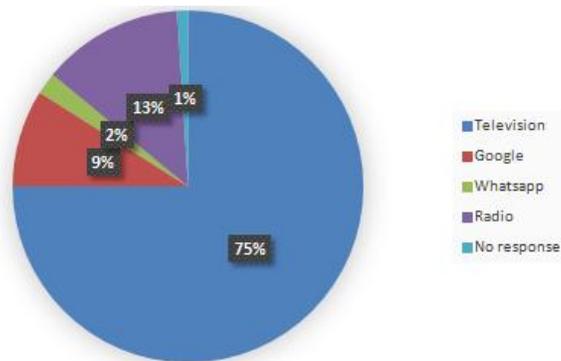
The male to female ratio was 0.7:1, More than half of the non-clinical HCW were females, 40 years and below, and indigenes of Plateau State. The age group with the highest frequency was respondents within the age of 31-40 years with 32%, while the highest frequency of education was found among those with secondary school leaving certificate with 35%, The attendants/radiology/records made up more than one-quarter of the non-clinical health care workers in BHUTH.

The knowledge, attitude and practice scores of the non-clinical health care workers were very good in 75%, 65% and 83% of the questions asked on knowledge, attitude and practice respectively. However, some of the questions on knowledge, attitude and practice also got the lowest scores of 17%, 40% and 46% respectively.

There was no significant difference in the knowledge and practice scores between the different cadre of non-clinical health care workers. However, there was a significant difference in the attitude scores between the different cadre of non-clinical health care workers ( $F=3.54$ ,  $P=0.02$ ).

**Table 1. Demography of respondents**

Variable	Frequency	Percentage
<b>Sex</b>		
Male	28	41.8
Female	38	56.7
No response	1	1.5
Total	67	100.0
<b>Tribe</b>		
Plateau tribe	39	58.2
Igbo	2	3.0
Yoruba	1	1.5
Hausa	1	1.5
Others	22	32.8
No response	2	3.0
Total	67	100.0
<b>Religion</b>		
Christian	66	98.5
Islam	1	1.5
Total	67	100.0
<b>Age group</b>		
<30	12	17.9
31-40	22	32.8
41-50	16	23.9
>50	4	6.0
No response	13	19.4
Total	67	100.0
<b>Education</b>		
Primary	4	6.0
Secondary	24	35.8
Diploma	22	32.8
B.Sc.	11	16.4
Masters	3	4.5
No response	3	4.5
Total	67	100.0
<b>Cadre</b>		
Admin/Acct	19	28.4
Physiotherapy/Lab	9	13.4
Transport/works/security	14	20.9
Attendants/radiology/records	25	37.3
Total	67	100.0



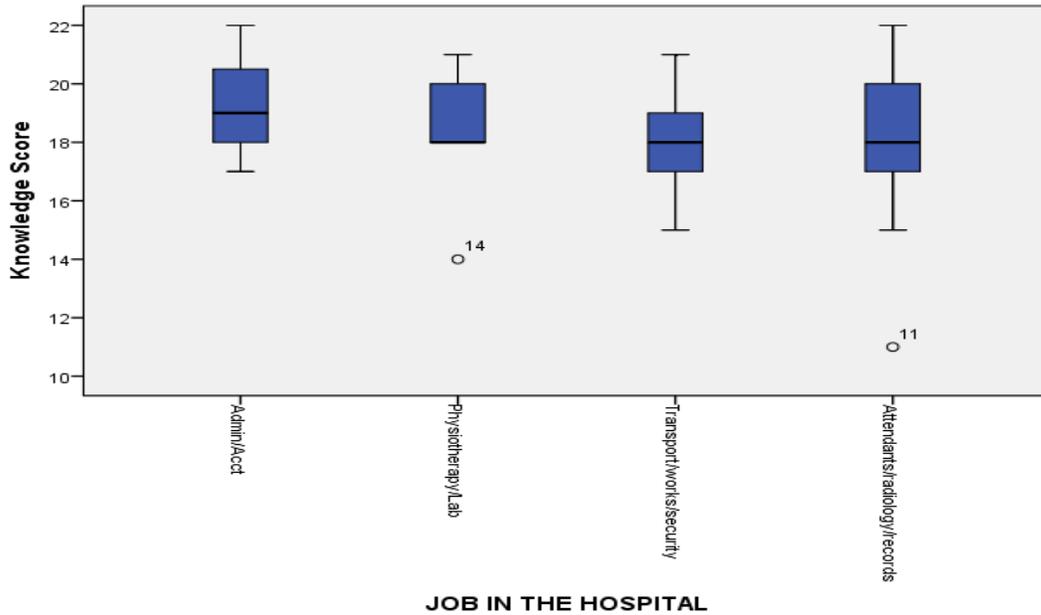
**Fig. 1. Major Source of Information of non-clinical health care workers**

**Table 2. Distribution of knowledge, attitude and practice of respondents**

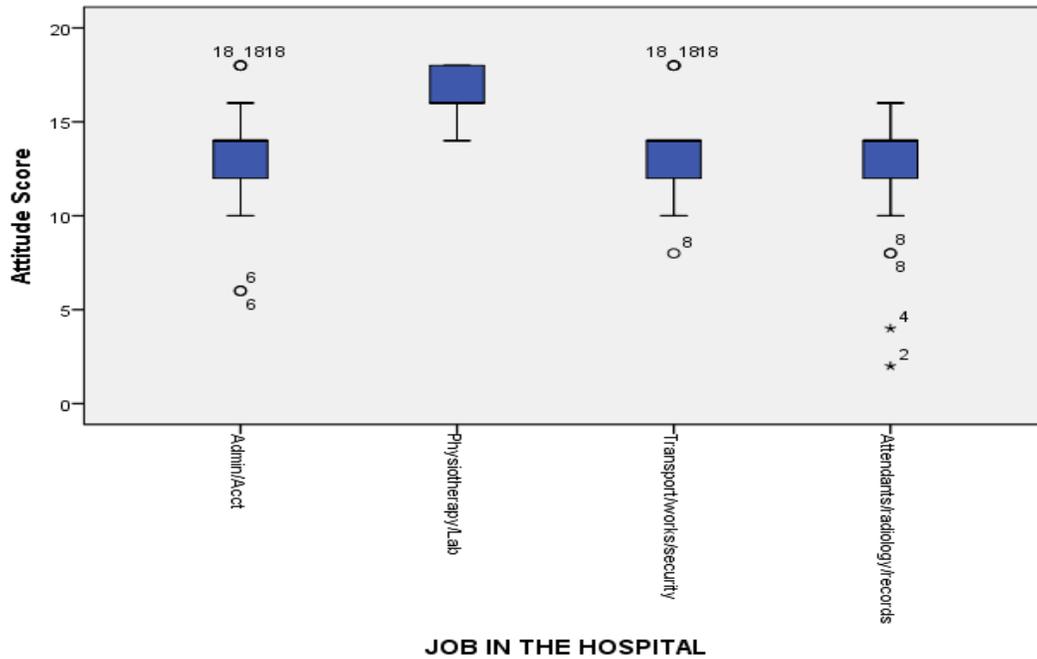
Question	I agree N (%)	I disagree N (%)	I don't know N (%)	NO response N (%)	% correct answer
<b>Knowledge</b>					
Q2	65 (97.0)	2 (3.0)	0 (0.0)	0 (0.0)	97.0
Q3	64 (95.5)	0 (0.0)	2 (3.0)	1 (1.5)	95.5
Q4	61 (91.0)	0 (0.0)	4 (6.0)	2 (3.0)	91.0
Q5	66 (98.5)	0 (0.0)	1 (1.5)	0 (0.0)	98.5
Q6	64 (95.5)	0 (0.0)	2 (3.0)	0 (0.0)	95.5
Q7	62 (92.5)	2 (3.0)	1 (1.5)	2 (3.0)	92.5
Q8	51 (76.1)	5 (7.5)	9 (13.4)	2 (3.0)	76.1
Q9	65 (97.0)	0 (0.0)	0 (0.0)	2 (3.0)	97.0
Q10	67 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	100.0
Q11	27 (40.3)	12 (17.9)	27 (40.3)	1 (1.5)	17.9
Q12	24 (35.8)	31 (46.3)	8 (11.9)	4 (6.0)	46.3
Q13	40 (59.7)	3 (4.5)	22 (32.8)	2 (3.0)	59.7
<b>Attitude</b>					
Q14	9 (13.4)	57 (85.1)	0 (0.0)	1 (1.5)	85.1
Q15	18 (26.9)	44 (65.7)	0 (0.0)	5 (7.5)	65.7
Q16	37 (55.2)	26 (38.8)	0 (0.0)	4 (6.0)	55.2
Q17	17 (25.4)	50 (74.6)	0 (0.0)	0 (0.0)	74.6
Q18	61 (91.0)	3 (4.5)	0 (0.0)	3 (4.5)	91.0
Q19	6 (9.0)	57 (85.1)	0 (0.0)	4 (6.0)	85.1
Q20	61 (91.0)	4 (6.0)	0 (0.0)	2 (3.0)	91.0
Q21	64 (95.5)	2 (3.0)	0 (0.0)	1 (1.5)	95.5
Q22	34 (50.7)	27 (40.3)	0 (0.0)	6 (9.0)	40.3
<b>Practice</b>					
Q23	18 (26.9)	48 (71.6)	0 (0.0)	1 (1.5)	71.6
Q24	51 (76.1)	15 (22.4)	0 (0.0)	1 (1.5)	76.1
Q25	34 (50.7)	31 (46.3)	0 (0.0)	2 (3.0)	46.3
Q26	48 (71.6)	18 (26.9)	0 (0.0)	1 (1.5)	71.6
Q27	62 (92.5)	3 (4.5)	0 (0.0)	2 (3.0)	92.5
Q28	53 (79.1)	13 (19.4)	0 (0.0)	1 (1.5)	79.1

**Table 3. Comparison of cadre for knowledge, attitude and practice for non clinical health care workers**

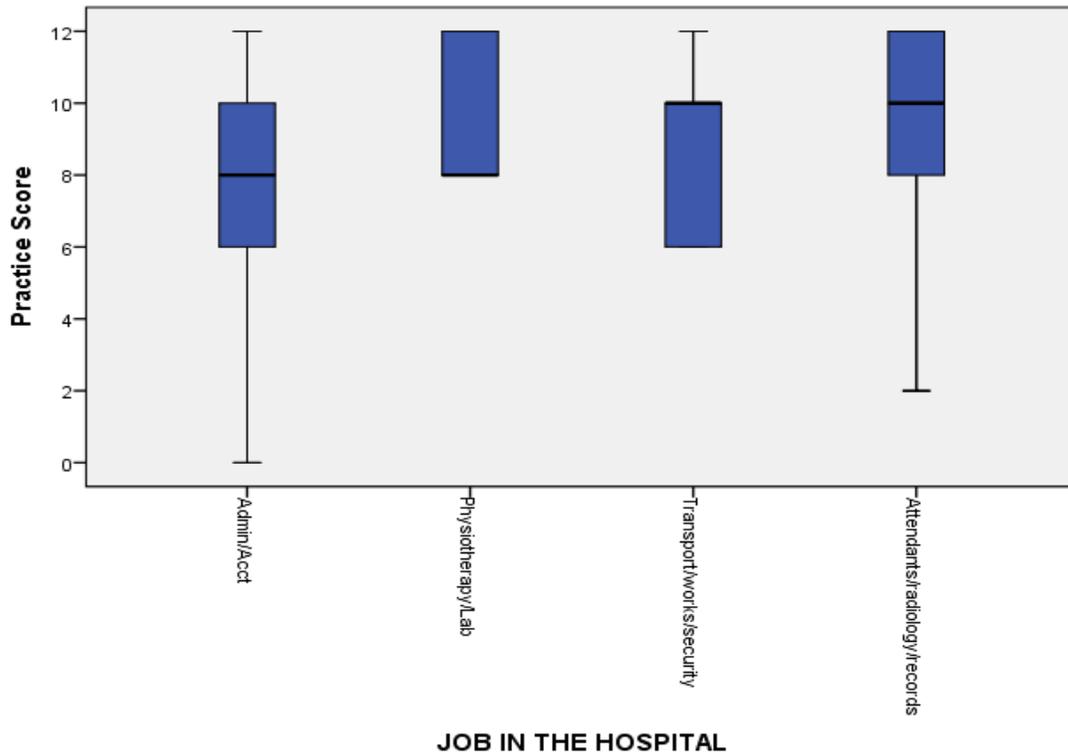
Variable	Mean±SD	F	P
<b>Knowledge scores</b>			
Admin/Acct	19.11±1.73	1.482	0.228
Physiotherapy/Lab	18.67±2.18		
Transport/works/security	17.79±1.58		
Attendants/radiology/records	18.08±2.33		
<b>Attitude scores</b>			
Admin/Acct	13.16±3.42	3.538	0.020
Physiotherapy/Lab	16.44±1.67		
Transport/works/security	13.43±3.08		
Attendants/radiology/records	12.32±3.64		
<b>Practice scores</b>			
Admin/Acct	7.89±3.02	1.133	0.343
Physiotherapy/Lab	9.33±2.00		
Transport/works/security	8.71±2.02		
Attendants/radiology/records	9.20±2.58		



**Fig. 2. Box plot for knowledge scores against cadre for non- clinical staff in BHUTH**  
 The box plots on knowledge scores were similar among the different non-clinical health care workers



**Fig. 3. Box plot for attitude scores against cadre for non clinical staff in Bhuth**  
 The attitude box plot showed that the minimum score in attitude of the physiotherapist/lab technologist was higher than the other non-clinical HCWs



**Fig. 4. Box plot for practice scores against cadre for non clinical staff in BHUTH**  
 The box plot for the practice score showed that the lowest scores were registered for the Admin/Account and Attendants/radiology/records groups of non-clinical health care workers

#### 4. DISCUSSION

The non-clinical HCWs of BHUTH showed good knowledge towards COVID-19 with no significant difference in knowledge amongst them. This is probably due to the high literacy rate amongst the non-clinical HCWs as more than half of the non-clinical HCWs had tertiary level of education. The range of correct answers however varied widely between 17.9% and 100%, indicative of the fact that they had high knowledge of some questions and poor knowledge of others.

One out of every three non-clinical HCW does not know that there is currently no vaccine for COVID-19. This may be dangerous as it may affect the way they go about their day-to-day work in the hospital and readiness to make use of Personal Protective Equipment's and other preventive measures. Furthermore, there has been conflicting information on the readiness, availability and safety of a vaccine for COVID-19 this may have played a role in the response of some of them [17]. Similarly, less than 1 in 5 non-

clinical HCWs knows that Chloroquine has not been approved for use for the treatment of COVID-19. The debate on chloroquine has generated worldwide controversy so it is not surprising to see the wide disparity in their response to the question on the approval of Chloroquine as the choice of drug for treatment of COVID-19 [18]. In the same vein, less than half of the non-clinical HCWs believe there is an added benefit in using face mask in non-infected people for prevention of COVID-19. This may be due in part to conflicting data on the efficacy of face mask in COVID-19 [19].

The mean score for attitude was significantly higher for Physiotherapy/Lab than Transport/works/security which was higher than Admin/Account and that of Attendants/radiology/records it is the opinion of the author that this is due to the fact that laboratory workers are in direct contact with human specimen hence the better attitude. In the same vein, physiotherapists have more contact with patients than the other categories hence the better attitude. There was no significant

difference in mean score for Practice amongst the cadre of non-clinical staff.

The box plots on knowledge scores were similar among the different non-clinical health care workers. This could be explained by the fact that most of their knowledge on COVID-19 were obtained from the same source, the television as shown by the pie chart on major source of information. The attitude box plot showed that the minimum score in attitude of the physiotherapist/lab technologist was higher than the other non-clinical HCWs. This could be because they have more direct contacts with patients than the other non-clinical HCW. In addition, it could be because they are few in number. The box plot for the practice score showed that the lowest scores were registered for the Admin/Acct and Attendants/radiology/records groups of non-clinical health care workers. This could be because they are not directly involved in patient's management.

There is paucity of data on the Knowledge, Attitude and Practice of non-clinical hospital workers in our setting, however a research done in Ghana also showed that non-clinical hospital workers demonstrated adequate knowledge about the disease which was attributable to their high level of education, this was higher than previous studies during disease outbreaks [20-21]. The difference in knowledge about COVID-19 and the previous disease outbreaks could be attributed relevant training of workers on COVID-19 [22].

## 5. CONCLUSION

The knowledge, attitude and practice of non-clinical HCWs showed a wide disparity among the different cadre. There is the need to ensure that all cadre of HCW are carried along during the trainings for infection and prevention control. The need to train non-clinical health care workers on COVID-19 in order to maintain a safe clinical environment and prevent the spread of the disease cannot be over-emphasized.

## CONSENT AND ETHICAL APPROVAL

Data collection entailed informed consent process and questionnaire administration. As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Zhong B, Luo W, Li H, Zhang Q, Liu X, Li W et al. Knowledge, Attitudes, and Practices towards COVID-19 among Chinese residents during rapid rise period of the COVID-19 outbreak: a quick cross-sectional survey. *Inter J Biol Sci.* 2020; 16:1745–1752.
2. Cui J, Li F, Shi ZL. Origin and evolution of pathogenic coronaviruses. *Nat. Rev. Microbiol.* 2019;17:181-192.
3. Coronaviridae-Positive Sense RNA Viruses-Positive Sense RNA Viruses. Accessed 25 March 2020. Available: [https://talk.ictvonline.org/ictvreports/ictv\\_9th\\_report/positive-sense-rna-viruses-2011/w/posrna\\_viruses/222/coronaviridae](https://talk.ictvonline.org/ictvreports/ictv_9th_report/positive-sense-rna-viruses-2011/w/posrna_viruses/222/coronaviridae).
4. Rabi FA, Zoubi MS, Al Kasasbeh GA, Salameh DM, Al-nasser AD. SARS-CoV-2 and Coronavirus Disease 2019: What do we know so far. *Pathogens* 2020;9(3):231-45.
5. Gorbalenya AE, Baker SC, Baric RS, de Groot RJ, Drosten C et al. Severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2. *Nat Microbiol.* 2020;5:536–544.
6. Zhou P, Yang XL, Wang XG, Hu B, Zhang W et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature.* 2020;579: 270-273.
7. Coronavirus Disease (COVID-19) Situation Reports. Accessed 6 November 2020. Available: <https://www.who.int/publications/m/item/weekly-epidemiological-update---3-november-2020>.
8. NCDC. First case of coronavirus disease (COVID-19) confirmed in Nigeria. Accessed 6 June 2020. Available: <https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-nigeria> February.
9. Update of COVID-19 outbreak - Nigeria Centre for Disease. Accessed 17 October 2020. Available: [ncdc.gov.ng > diseases > sitreps > name=An update of ...](https://ncdc.gov.ng/diseases/sitreps/name=An%20update%20of%20)

10. WHO. Coronavirus disease (COVID-19) advice for the Public. Accessed 17 October 2020. Available: [www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public](http://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public).
11. Azian AA, Hamzah MR, Sern TJ, Ayub SH, Mohammed, E. Public Knowledge, Attitudes, and Practices Towards COVID-19: A cross-sectional study in Malaysia. *PLoS ONE* 15(5):e0233668. Available: <https://doi.org/10.1371/journal.pone.0233668>
12. COVID-19: Lagos, FCT & Ogun State to go into lockdown. Accessed 17 June 2020. Available: <https://www.cnbc.com/africa/coronavirus/2020/03/29/covid-19-lagos-fct-ogun-state-to-go-into-lockdown/>.
13. McEachan R, Taylor N, Harrison R, Lawton R, Gardner J, Conner M. Meta-Analysis of the Reasoned Action Approach (RAA) to Understanding Health Behaviors. *Ann Behav Med*. 2016.50(4):592-612
14. 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;13:260-265
15. Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Amit S et al. COVID-19 Awareness Among Healthcare Students and Professionals in Mumbai Metropolitan Region: A Questionnaire- Based Survey. Accessed 16 October 2020. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7198075/>
16. Lai X, Wang M, Qin C, Tan L, Ran L, Chen D et al. Coronavirus Disease 2019 (COVID-2019) Infection Among Health Care Workers and Implications for Prevention Measures in a Tertiary Hospital in Wuhan, China. Accessed 17 June 2020. Available: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2766227>
17. Bowman E. Public health expert calls to repair distrust in a COVID-19 vaccine. Accessed 17 August 2020. Available: <https://www.npr.org/sections/coronavirus-liveupdates/2020/08/01/897939117/public-health-expert-calls-to-repair-distrust-in-a-covid-19-vaccine>.
18. Dall C. Controversy over data in hydroxychloroquine COVID-19 study grows. Accessed 17 July 2020. Available: <https://www.cidrap.umn.edu/news-perspective/2020/06/controversy-over-data-hydroxychloroquine-covid-19-study-grows>.
19. Soucheray S. Controversy on COVID-19 mask study spotlights messiness of science during a pandemic. Accessed 17 July 2020. Available: <https://www.cidrap.umn.edu/news-perspective/2020/06/controversy-covid-19-mask-study-spotlights-messiness-science>.
20. Daugherty EL, Perl TM, Rubinson L, Bilderback A, Rand CS. Survey study of the knowledge, attitudes, and expected behaviors of critical care clinicians regarding an influenza pandemic. *Infect Control Hosp Epidemiol* 2009;30: 1143-1149.
21. Ma X, He Z, Wang Y, Jiang L, Xu Y, Qian C et al. Knowledge and attitudes of healthcare workers in Chinese intensive care units regarding 2009 H1N1 influenza pandemic. *BMC Infect Dis* 2011; 25:11-24.
22. Nkansah C, Serwaa D, Akua LA, Osei-Boakye F, Mensah F, Tetteh P et al. Novel Coronavirus Disease 2019: Knowledge, Practice and Preparedness: a survey of healthcare workers in the Offinso-North District, Ghana. *Pan African Medical Journal*. 2020;35:79-85.
23. Nkansah C, Serwaa D, Akua LA, Osei-Boakye F, Mensah F, Tetteh P, et al. Novel coronavirus disease 2019: Knowledge, practice and preparedness: A survey of healthcare workers in the Offinso-North District, Ghana. *Pan Africa Medical Journal*. 2020;35:79-85.

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