

## Original Article

### Compliance and perception towards COVID-19 preventive protocols among hospital staff in a tertiary health facility, Southwest Nigeria.

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#### Abstract

**Background:** The COVID-19 outbreak response in Nigeria was challenged by the existing weak health sector and the frontline health workers for COVID-19 pandemic response are exposed to the pathogen. One militating factor undermining the control and prevention of COVID-19 in Nigeria was poor compliance to preventive measures. This study assessed the compliance with COVID-19 prevention protocols among healthcare workers in Federal Teaching Hospital, Ido-Ekiti, Ekiti State, Nigeria.

**Methods:** A cross sectional study and subjects were selected through a multi-stage sampling technique. Data collection was done using interviewer-administered semi-structured questionnaire over a period of five months (June-October, 2021). Data was analyzed using IBM, Statistical Package for Social Sciences (SPSS) version 27.0 and p value was set at <0.05 as the threshold for statistical significance.

**Results:** Majority (60.1%), of the respondents got information on COVID-19 protocols through seminars and workshops. However, more than a quarter (28.8%) of the respondents said the use of available PPE was suboptimal. More than one-third, (35.8%), of respondents believe the protocols are too strict. There is, however, good perception (93.3%), but relatively lower compliance (58.7%) of COVID-19 protocols among the staff. Age, marital status and sex were associated with compliance towards COVID-19 protocols in this study ( $P < 0.05$ ). Identified significant predictors ( $p < 0.05$ ) of compliance include age (AOR=1.944), female sex (AOR=7.829).

**Conclusion:** Most respondents had good knowledge of availability, perception of effectiveness, but relatively lower compliance with the COVID-19 protocols in this facility. The government or hospital authority make sure that necessary steps to further boost compliance are taken.

**Keywords:** Compliance, COVID-19 protocols, Hospital staff, Nigeria

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#### Introduction

Coronaviruses (CoV) represent a family of viruses causing illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). The virus causing COVID-19 is, however, a novel coronavirus (nCoV) not previously identified in humans [1]. They are zoonotic, (transmitted between animals and people) spread through droplets (generated through coughing or sneezing, talking or breathing), that may land in any of the facial orifices of people who are nearby, or get inhaled into their lungs; hence its rapid transmission [1].

The index case was reported in December 2019 from Wuhan, Hubei province, China and has since spread

globally [2]. Declared as a pandemic by WHO on March 11, 2020, the impact of COVID-19 cuts across the whole world and has profoundly impacted humanity and global economy. COVID-19 also exposed the poor state of health infrastructure in Nigeria with poor emergency preparedness as evidenced by lack of preventive protocols, ill-equipped and non-existing isolation wards, thereby exposing health workers to the deadly disease [3].

Protocols for COVID-19 control and prevention for health workers includes all standard precautions for infectious disease prevention and control as applied: hand washing (with soap and water or alcohol based hand sanitizers), use of personal protective equipment (gloves, masks, eye-wear), res-

piratory hygiene/cough etiquette, cleaning and disinfection of environmental surfaces, injection and sharps safety, sterile instruments and devices; quarantine of exposed patients and isolation and careful handling of infected patients including their samples [2].

Studies showed that quarantine, contact tracing, screening and isolation in different setting were of great benefits [4, 5]. However, compliance with and proper use of some of these precautionary methods were not properly observed even by health workers in Nigeria. Poor understanding of and compliance with the disease preventive protocols can lead to delay in instituting necessary intervention leading to transmission of infections. Despite the numerous guidelines for healthcare workers and window of online refresher courses developed by WHO, CDC, and various governmental organizations in various countries to boost the knowledge and prevention strategies, one of the major challenges which militate against the control and prevention of COVID-19 in Nigeria was the issue of poor compliance and attitude [4]. Healthcare institutions' preparedness to manage any outbreak of public health significance is dependent on several factors like adequate space for isolation of infected patients, clinical staff capacity, training exposure on biosafety issues, facility diagnostic capacity, and availability of personal protective equipment (PPE), and health care worker motivation among others [4].

The underutilization of PPE was reported by Wu *et al* and the National Hospital Infection Management and Quality Control Center as the trigger for a large-scale infection of HCWs from the Hubei province in China [6, 7]. Similarly, the Henry Ford Health System also had 46.6% of its workers infected with SARS-CoV-2 [8]. These reports result into fear among HCWs giving the absence of a definitive treatment or a vaccine for SARS-CoV-2 [6, 8]. This necessitates critical assessment of compliance with preventive protocols and workplace safety among healthcare workers during the COVID-19 pandemic and beyond.

Of 529 participants in a cross-sectional study done by obtaining responses from health workers globally in March 2020, 63.6% of health workers had a positive perception of COVID-19 preventive measures [9]. Majority of the health care workers in Pakistan marked N-95 mask as essential during the collection of nasopharyngeal samples and conduct of other aerosol-generating procedures (88%), and direct care of COVID-19 patient (82%) [9]. In South Africa, about half (55.6%) of health workers had received infection prevention and control training, and they were willing to comply. However, some had no access to medical masks (11.8%) and gloves (9.9%) in their departments but were definitely willing to make use of any available resources in fighting against the infection [10].

A web-based cross-sectional study among Nigerians

found that knowledge is a predictor of adherence to precautionary measures among the respondents [11]. A study among health workers in South-South, Nigeria showed that majority of the participants 183 (61%) felt at risk of being infected by the virus. Most of the participants 186 (62%) agreed to inadequate work place safety and the lack of social insurance policy for healthcare workers was also seen as an obstacle to effective service delivery especially in this period of the pandemic [12]. All the participants 300 (100%) agreed to the provision of personal protective equipment (PPE) to all healthcare workers [12].

A research done on Nigerian dental students showed that most respondents (95.1%) had good perception to infection control practices in preventing the spread of COVID-19 in their clinics and training schools [13]. These responses included the perception that the current infection control measures standard in their dental schools was effective in preventing the spread of COVID-19 (24.5%). Majority (95.1%) agreed that aerosol-generating procedures in dentistry carried a high risk of spreading COVID-19 [13].

Generally, compliance with infection control behaviours can be difficult among the population. However, the thrust for compliance in the general population appears to be perceived susceptibility, perceived severity and perceived benefits of compliance in addition to accurate knowledge about the disease and the recommended behaviours. However, the major barriers include discomfort, embarrassment and practical issues [11]. Despite, the efforts at curtailing the pandemic, cases are still being recorded which might be a pointer to a gap in compliance with COVID-19 prevention protocols among hospital workers. Though, studies have been done on this subject, there is paucity of data on compliance with COVID-19 prevention among healthcare workers in our local setting. Thus, the objective this study was to assess compliance with and perception of COVID-19 protocols and identify its associated factors and predictors in order to scale up efforts at addressing identified gaps.

## Methods

Ekiti State, one of the six states constituting the south-western region of Nigeria, is located between longitudes  $4^{\circ} 45'$  and  $5^{\circ} 45'$  East of the Greenwich meridian and latitudes  $7^{\circ} 15'$  and  $8^{\circ} 15'$  North of the equator. With three senatorial districts (Ekiti South, Ekiti central and Ekiti North) and 16 Local Government Areas, the indigenous people of Ekiti state are mainly Yoruba (and speak the Ekiti dialect) with some non-indigenes, and other ethnic groups are also living in the state. Most of the people are Christians with some Muslims and few traditional worshippers.

The Federal Teaching Hospital, Ido-Ekiti is a 270-bedded tertiary health care facility and clinical training institution in Nigeria. It is the only tertiary insti-

tution in Ido-Ekiti, and trains medical and non-medical students from Afe Babalola University, Ado-Ekiti, alongside post graduate training via its residency programs in numerous subspecialties e.g. Obstetrics and Gynecology, Community medicine, Psychiatry, Internal Medicine, Surgery, Pediatrics and Family Medicine, etc. The hospital is one of the treatment centers for COVID-19 patients in Ekiti State, and has managed several cases. It has a holding area for suspected cases and an isolation/treatment ward for confirmed cases with designated staff like Doctors, Nurses, Health Assistants, Environmental Health Officers working in these areas with possible risk of exposure and transmission within the hospital.

### Study design, eligibility criteria

This is a cross-sectional survey of COVID-19 protocol perception and compliance amongst healthcare workers in Federal Teaching Hospital, Ido-Ekiti. The total population of healthcare workers (clinical and non-clinical staff) in the hospital was about 2732. All consenting healthcare workers were recruited, while those who were working in the COVID-19 holding and isolation ward were excluded to prevent subject/selection bias. They were excluded because they were likely going to skew the knowledge and compliance assessment because of training and exposure to and usage of these measures.

### Sample size Calculation

Using the Leslie Fischer's formula for population >10,000, the sample size was determined as follows:  $n = Z^2 pq / e^2$  [14], Where  $n$  = minimum sample size;  $Z$  = Standard normal deviate = 1.96;  $p$  = Compliance with COVID-19 protocols = 55.6% = 0.556 [11];  $q = 1 - p = 0.444$ ;  $e$  = level of desired accuracy = 0.05

$$n = \frac{(1.96)^2 \times 0.556 \times 0.444}{(0.05)^2}$$

$$n = 380 \text{ (approximately)}$$

Since population size was <10,000;  $n_{\text{corrected}} = n / (1 + n - 1 / N)$  Where,  $n$  = Sample size = 380  $N$  = population size,  $N = 2732$ ;  $n = 333$ . Non response rate of 10%, which gives 33, was added and the total sample size now becomes 366 (333+33).

### Sampling Technique

A multistage sampling technique was used to select respondents.

**Stage I:** Stratified sampling technique was used to group the healthcare workers into 2 strata (clinical and non-clinical staff). Clinical staffs were further stratified based on cadre. Proportionate allocation was used to allocate the number of participants to be selected from each category.

**Stage II:** Using the sampling frame for each category, simple random sampling using computer-generated table of random numbers was used to select willing participants till the allocated sample size for each was attained and till the overall sample size of 366 was reached.

### Operational definitions

For the purpose of this study, the term hospital staff refers to clinical staffs who were involved in patient care. Secondly, compliance in this study refers to a deliberate effort at following the preventive measures, while perception is used here to refer to feeling or thinking about the preventive protocols.

### Research instrument and data collection and analysis

A semi-structured questionnaire was designed by the authors and used for data collection. The questionnaire was divided into four sections (socio-demographic, knowledge of COVID-19 protocols, perception and factors affecting compliance with COVID-19 protocols). Some of the questions was adapted from previous related studies. The questionnaire was pre-tested among healthcare workers in Afe Babalola University Multisystem Hospital, Ado-Ekiti, a distance of about 43km from the study site. For reliability, test-retest was done and reliability co-efficient of,  $r = 0.7$  was obtained which showed the tool is reliable [15]. Participants were informed about the study with clear instructions on how to fill the questionnaire in order to make the data valid, reliable and useful. The data obtained from the questionnaires were analyzed with IBM, Statistical Package for Social Sciences (SPSS) version 27.0. The perception and compliance on COVID-19 protocols were scored and graded into poor (<70%) and good ( $\geq 70\%$ ). This dichotomy was arrived by the authors using the mean and the spread of the scores.

### Ethical Consideration

An ethical clearance with protocol number ERC/2021/06/11/558B and dated 16/06/2021 was obtained from the Ethical Committee of the Federal Teaching Hospital, Ido-Ekiti before the study was carried out. Informed verbal consent was obtained from every respondent prior to participation in this study after explaining the purpose, content, and implication of the research. Participation was voluntary; anonymity and confidentiality of the information provided was assured. Respondents who did not give consent to participate in this study were exempted.

### Results

Three hundred and sixty-six (366) questionnaires were administered among healthcare workers. Three hundred and fifty-eight (358) of these questionnaires were returned completely filled and analyzed, giving a response rate of 97.8% percent.

Most of the respondents were within the age range of 20-39 years (57.3%), majority were

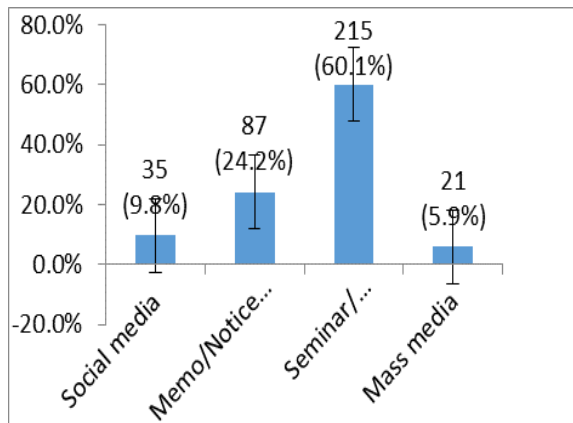
males (52.0%), had ever been married (76.3%), had tertiary education (64.0%), were doctors at different levels in their career training; Consultants (12.8%), Senior registrars (10.9%), Junior registrars (22.9%), Nurses (24.9%) and provided direct health care to patients (79.9%) (Table 1).

Table 1: Socio-demographic characteristics of respondents.

Variable	Frequency N = 358	Percentage (%)
Age group (in years)		
20 – 39	205	57.3
40 – 59	153	42.7
Sex		
Male	186	52.0
Female	172	48.0
Marital status		
Never married	85	23.7
Ever married	273	76.3
Educational attainment		
Secondary education	22	6.1
Tertiary education	229	64.0
Master's degree	57	15.9
Fellowship/Ph.D.	50	14.0
Status in health care facility		
Consultant	46	12.8
Senior registrar	39	10.9
Junior registrar	82	22.9
Nurse	89	24.9
Health assistant	57	15.9
Department/Unit		
Medicine	63	17.6
Surgery	61	17.0
Pediatric	66	18.4
Infectious disease unit	12	18.4
Obstetrics and gynecol-	79	22.1
Others	77	21.5
Provide direct health care to patients		
Yes	286	79.9
No	72	20.1
Number of children living in the home		
None	110	30.7
1 – 2	120	33.5
≥ 3	128	35.8
Number of elderly living in the home		
None	272	76.0
1 – 2	63	17.6
≥ 3	23	6.4

The majority of the information (60.1%) were obtained from Seminars/Workshops and least being from mass media (5.9%) (Figure 1).

Figure 1: Sources of information on COVID-19 protocols among hospital staff in federal teaching



hospital, Ido-Ekiti.

Majority (84.3%) knew that hand hygiene facilities/stands are available and were in use by the staff. Similarly, (83.5%) and (93.3%) of them knew that hand soap and running water available and made use of them, respectively. Out of the respondents, 299 (83.5%) knew that there were dedicated isolated facilities for suspected/confirmed COVID-19 patients. (Table 2)

**Table 2:** Knowledge of availability and use of COVID-19 protocols among respondents in federal teaching hospital, Ido-Ekiti. (N=358)

Variables	Available in use (%)	Not available (%)
COVID-19 preventive measures		
Hand hygiene	302 (84.3)	31 (8.7)
Face masks	352 (98.3)	6 (1.7)
Disposable aprons	280 (78.2)	65 (18.2)
Protective gloves	333 (93.0)	6 (1.7)
PPE	240 (67.0)	103 (28.8)
Eye protection	243 (67.9)	59 (16.5)
Hand sanitizer	314 (87.7)	16 (4.5)
Hand soap	299 (83.5)	4 (1.1)
Running water	334 (93.3)	14 (3.9)
Isolation centre/ward	299 (83.5)	59 (16.5)

More than one-third, (35.8%), of respondents believe the protocols were too strict and unattainable, while (99.4%) of respondents expressed the importance of washing of hands with soap and water (Table 3)

**Table 3:** Respondents' perception towards COVID-19 protocols

Perception	Yes N = 358	Percentage (%)
Think the protocols are too strict and unattainable	128	35.8
People who have contact with COVID-19 infected person to isolate in a proper place.	353	98.6
Washing hands with soap and water frequently for at least 20 seconds and using alcohol-based sanitizers is important in prevention of COVID-19.	356	99.4
Putting on masks when moving about in the hospital to prevent infection with COVID-19.	355	99.2
COVID-19 virus spreads via respiratory droplets of infected individuals during sneezing or coughing by an infected person.	349	97.5
Staying 6 feet apart during conversations help limit the spread of COVID-19.	343	95.8
Touching or shaking hands of an infected person would result in the infection by COVID-19 virus.	290	81.0
COVID-19 will be severe among elderly, those with chronic illnesses, and the immunosuppressed	316	88.3
COVID-19 has a 100% mortality rate.	127	35.5

PPE was always worn by about a third of 20.7% of the respondents who participated in this study. Face shields were worn by (39.9%) of the respondents. Majority always make use of face masks (81.3%), alcohol based sanitizers (81.0%), regular hand washing (80.2%), and use of protective hand gloves (81.3%) (Table 4). However, just about half (58.7%) of them demonstrated compliance with the protocols with 148 (41.3%) having poor compliance with COVID-19 protocols. (Table 5). More than three quarters, 334 (93.3%) of them had good perception of COVID-19 protocols in this

facility (Table 5).

**Table 4:** Compliance with COVID-19 protocols among respondents (N=358)

Variables	Compliance			
	Always n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Face mask	291 (81.3)	63 (17.6)	4 (1.1)	0 (0.0)
Face shield	143 (39.9)	130 (36.3)	59 (16.5)	26 (7.3)
Alcohol-based hand sanitizer	290 (81.0)	36 (10.0)	30 (8.4)	2 (0.6)
*PPE	123 (34.4)	108 (30.2)	53 (14.8)	74 (20.6)
Social/Physical distance	162 (45.3)	133 (37.2)	36 (10.0)	27 (7.5)
Avoiding handshakes	174 (48.6)	120 (33.5)	48 (13.4)	16 (4.5)
Observing cough etiquettes	248 (69.3)	95 (26.5)	8 (2.2)	7 (2.0)
Regular hand washing	287 (80.2)	67 (18.7)	4 (1.1)	0 (0.0)
Protective hand gloves	291 (81.3)	54 (15.0)	6 (1.7)	7 (2.0)

**Table 5:** Perception and compliance scoring among respondents

Variable	Frequency	Percentage (%)
Perception of COVID-19 protocols		
Good ( $\geq 70\%$ )	334	93.3
Poor ( $< 70\%$ )	24	6.7
Mean score $\pm$ SD	87.6 $\pm$ 11.8	
Range	22.2-87.6	
Compliance with COVID-19 protocols		
Good ( $\geq 70\%$ )	210	58.7
Poor ( $< 70\%$ )	148	41.3
Mean score $\pm$ SD	82.7 $\pm$ 14.8	
Range	36.8-100.0	

There was significant association between the marital status, age, sex, department/unit, provision of direct health care of the respondent and their compliance with COVID-19 protocols. (Table 6)

Female respondents were about eight times more compliant with COVID-19 protocols than the male respondents ( $p < 0.001$ ). Also, health workers in the infectious disease unit were three times more compliant than other categories of health workers. ( $p = 0.002$ ) (Table 7)

Table 6: Factors associated with compliance towards COVID-19 protocols among respondents

Variable	Compliance with COVID-19 protocols		p-value
	Good n (%)	Poor n (%)	
Age group (in years)			
20 – 39	107 (52.2)	98 (47.8)	0.004
40 – 59	103 (67.3)	50 (32.7)	
Sex			
Male	97 (52.2)	89 (47.8)	0.009
Female	113 (65.7)	59 (34.3)	
Marital Status			
Never married	32 (37.6)	53 (62.4)	<0.001
Ever Married	178 (65.2)	95 (34.8)	
Educational Attainment			
Secondary Education	7 (31.8)	15 (68.2)	<0.001
Tertiary Education	126 (55.0)	103 (45.0)	
Master's Degree	32 (56.1)	25 (43.9)	
Fellowship/Ph.D.	45 (90.0)	5 (10.0)	
Status in Health Care Facility			
Consultant	43 (93.5)	3 (6.5)	<0.001
Senior Registrar	32 (82.1)	7 (17.9)	
Junior Registrar	47 (57.3)	35 (42.7)	
Nurse	52 (58.4)	37 (41.6)	
Health Assistant	23 (40.4)	34 (59.6)	
Other Health Worker	13 (28.9)	32 (71.1)	
Department/Unit			
Medicine	50 (79.4)	13 (20.6)	<0.001
Surgery	42 (68.9)	19 (31.1)	
Pediatrics	21 (31.8)	45 (68.2)	
Infectious Disease unit	11 (91.7)	1 (8.3)	
Obstetrics and Gynaecology	63 (79.7)	16 (20.3)	
Others	23 (29.9)	54 (70.1)	
Provide direct health care to patients			
Yes	191 (66.8)	95 (33.2)	<0.001
No	19 (26.4)	53 (73.6)	
Knowledge of COVID-19 protocols			
Good	204 (61.1)	130 (38.9)	
Poor	6 (25.0)	18 (75.0)	

### Discussion

In this study, 358 respondents were sampled with the doctors being more which was similar to other studies conducted in Nigeria and Latin America [16, 17]. This might be due to the nature of the research which borders on safety and compliance with protocols. In addition, doctors are directly involved in patient care, and therefore are at a higher risk of exposure to COVID-19 which may serve as the impetus behind the participation.

The most common source of information was seminars/workshops (60.1%), followed by memo/notice boards (24.2%) and least was mass media (5.9% which served as media to improve the knowledge of the health workers.. This finding agreed with that of a similar study conducted in India where healthcare workers had inadequate knowledge about COVID-19 pandemic [9]. The sample size and geographical variations of our studies could explain the differences in our findings.

**Table 7:** Predictors of good compliance with COVID-19 protocols in federal teaching hospital, Ido-Ekiti.

Variable	AOR	95% CI	p-value
Age group (in years)			
20 – 39 <sup>(ref)</sup>	1.000		
40 – 59	1.944	0.806 – 4.689	0.139
Sex			
Male <sup>(ref)</sup>	1.000		
Female	7.829	3.203 – 19.135	<0.001
Marital status			
Never married <sup>(ref)</sup>	1.000		
Ever married	1.684	0.543 – 5.221	0.366
Educational attainment			
Secondary education <sup>(ref)</sup>	1.000		
Tertiary education	2.002	0.351 – 11.406	0.434
Master's degree	1.172	0.161 – 8.558	0.876
Fellowship/Ph.D.	4.155	1.454 – 37.996	0.027
Status in health care facility			
Consultant	65.100	3.130 – 1353.836	0.007
Senior registrar	43.754	69.855 – 691.855	0.007
Junior registrar	12.450	1.141 – 135.831	0.039
Nurse	7.206	0.883 – 58.771	0.065
Health assistant	2.667	0.306 – 23.253	0.375
Other health worker <sup>(ref)</sup>	1.000		
Department/Unit			
Medicine	2.011	0.448 – 9.025	0.362
Surgery	1.470	0.098 – 3.259	0.346
Pediatrics	1.081	0.017 – 2.389	0.057
Infectious disease unit	3.325	1.240 – 46.041	0.002
Obstetrics and gynaecology	1.658	0.140 – 3.083	0.595
Others <sup>(ref)</sup>	1.000		
Provide direct care to patients			
Yes	2.981	1.007 – 8.828	0.049
No <sup>(ref)</sup>	1.000		

Generally, most of the participants (91.6%) had a positive perception about the preventive and control measures of COVID-19. About a third (35.5%) had poor perception on the mortality rate of COVID-19 as 100%. These responses on perception among healthcare workers could have negative consequences on patient care and also on the dynamics of potential COVID-19 outbreaks. This could lead to delays in the implementation of necessary preventive measures, which may increase the burden of COVID-19. Healthcare workers with negative perception could also spread infection to coworkers, their families and the general public [12], thereby increasing the burden of the disease both in terms of reproduction number, morbidity and mortality.

In this study, most respondents had good practice of preventive measures of COVID-19 for this was conducted among homogenous group of hospital workers. This helps reduce the risk of spread of the disease and transmission of the infection by health care workers to their families. This was also obtained in a study among nurses in a selected tertiary hospital in south-south Nigeria, where majority reported practicing the preventive measures of COVID-19 [18].



The study was also among healthcare workers in a tertiary setting just like the present study; hence, the finding was similar. Similar findings were reported by studies conducted in Saudi Arabia and among Chinese residents [19, 20]. In these studies, health care workers were willing and ready to apply infection control measures since the onset of MERS-CoV. However, almost two thirds of their respondents were not aware of protocols for the care of patients with MERS-CoV infection during the peak of COVID-19 infection [19, 20].

This study also showed significant association between marital status, sex and compliance with COVID-19 preventive measures. Good compliance was reported more among married healthcare workers (65.2%), and the female respondents and older respondents had a better compliance than those who were younger. Female hospital staff were almost eight times more compliant than their male counterparts, and older respondents were almost twice (AOR=1.944; 95%CI= 0.806-4.689) more compliant than the younger ones. Older respondents with possible co-morbidities are more likely to be cautious compared with the younger who feel they are agile and healthy with no compelling reason for observing the preventive measures. There was a downward trend in the odds of compliance with COVID-19 protocols in the cadre and qualifications of the hospital staff as the Consultant were found to be sixty-five times more compliant than other hospital staff. Similarly, those with Fellowship/Ph.D. were four times more compliant. This could be due to the fact that knowledge and degree of exposure towards the virus also follow this trend presumably. Majority of the participants also strongly agreed that there was high possibility of getting the infection in the hospitals. These findings are in agreement with those of similar studies where sex, level of education, years of experience and unit of practice were determinants of compliance with preventive measures of COVID-19 [18, 21].

### **Conclusion**

Majority of the respondents were aware of the COVID-19 prevention protocols with seminar / workshop being the most common source of information. The hospital staff demonstrated good perception, but relatively lower compliance with COVID-19 preventive protocols. The predictive factors of compliance with COVID-19 protocols include older age, female sex, higher cadre and qualifications.

### **Recommendations**

The Management of the Hospital needs to put monitoring measures in place to scale up compliance with the COVID-19 preventive protocols particularly targeting younger workers, male staff and those in lower cadre in the hospital.

There is a need for the Hospital Management to also scale-up training on the use of COVID-19 prevention protocols among the staff of the Hospital. The Government should also assist the Hospitals in ensuring steady supplies and provision of these preventive gadgets to prevent stock-out.

### **Conflict of interest declaration**

The authors declare no conflict of interest, and the study was financed by the authors.

### **Author contributions**

KAD- Conceptualization of research title, study design, data analysis and presentation and manuscript preparation; MOA- Review of manuscript and methodology; TTA- Field work, data collection and data analysis; EBI- Manuscript write-up and data collection; OA- Literature review and data collection; POA- Literature review; EME-Field work and data collection; SAA-Literature review; CCC-Design of research tool and data collection; ENE-Field work, data analysis; IEA-Design of research tool and data collection; AGN- Literature review; KJO- Design of research tool and data collection; OO-Manuscript preparation and editing; HY-Field work and data collection.

### **Implications of the study**

This study found that compliance with COVID-19 protocols among the study population of hospital staff was below average. With this poor compliance, the control and transmission of COVID-19 within and outside the hospital environment might be difficult to achieve. It also showed a gap in the control efforts geared towards the disease in this locality.

### **Study limitations**

This is a cross-sectional study design, and the statistical associations or inferences obtained may not be causal. Being cross-sectional, it may also be prone to recall bias and due to the fact that the study assessed compliance and perception to a desirable practice, it might also be faced with social desirability bias.

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