INFECTION PREVENTION AND CONTROL PRACTICE: COMPLIANCE AMONG HEALTHCARE WORKERS IN NIGERIA DURING COVID-19

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ABSTRACT

Background: The COVID-19 infection has become a global pandemic and received attention worldwide with varying consequences of death or ill-health among Health Care Workers (HCWs). As a result of COVID-19, infection prevention and control (IPC) practices have been identified to play a concrete role in combating the spread of COVID-19 globally. Infection prevention and control (IPC) programs that are well-planned and carefully implemented have been shown to reduce illness, reduce hospital stays, prevent death, and save money.

Aim: This study aimed to investigate compliance with IPC practice among HCWs in Nigeria.

Methods: The study adopted a cross-sectional design that used a self-administered paper-based questionnaire. Seventy-eight (78) HCWs workers from different disciplines in different healthcare centres participated across Nigeria. A convenience sampling technique was used. Descriptive statistics of percentages and descriptive statistics were used to present the results.

Results: more than half of the participants 44 (56.4%), were medical doctors with the majority of respondents' ages ranging between 25 and 34 years. All the respondents indicated 100% compliance with handwashing practices during the period of COVID-19. Only 65 (83.2%) wear surgical/N95 masks during patient contact while 51 (65.3%) ensure the maintenance of social/physical distancing during working hours.

Conclusion: This study revealed that the HCWs in Nigeria have a relatively good compliance rate to IPC practice indicating they are better positioned to combat outbreaks.

Keywords: *Infection Prevention and Control (IPC), Practice, Compliance, COVID-19*

INTRODUCTION

The COVID-19 infection has become a global pandemic and received attention worldwide[1,2]. The pandemic caused by COVID-19 has spread to virtually all countries globally with exponential growth among developed and developing countries[2]. There has also been a steady increase in the number of healthcare workers (HCWs) deaths globally. Worldwide, the workplace is responsible for about 40% of infections among Healthcare Workers, and Healthcare settings present an easy location for HCWs to contract and transmit SARS-Cov-2[3]. To this end, infection prevention and control (IPC) practices have been identified to play a concrete role in combatting the spread of COVID-19 globally[2]. Adherence to IPC practices plays a pivotal role in HCWs' safety with an extended effect on patient protection and also the care environment[4]. The IPC was recognized as one of the many actions to be taken by countries in their preparedness and readiness towards mitigating the spread of SARS-CoV-2 thereby reducing the mortality and morbidity of COVID-19 among the population[2]. As many people were hospitalized, IPC practices played a pivotal role in combatting the spread of SARS-CoV-2 in the healthcare setting and among HCWs[5]. The provision of high-quality healthcare is significantly impacted by the health of healthcare professionals during the COVID-19 pandemic. In addition, HCWs are highly susceptible to SARS-CoV-2 and could easily be a target for onward transmission of COVID-19[6]. The work of Pappas et al.[7] explained that high infection rates among HCWs had mental and social effects such as discrimination, depression, stigmatization, loss, and anxiety.

Worldwide, the precautionary measures to stop the COVID-19 virus from spreading which included social /physical distancing, the practice of hand hygiene, and the use of medical masks and personal protective equipment (PPE) have been successfully implemented[8]. The WHO designated the COVID-19 pandemic as a public health emergency of international concern in January 2020 and thereafter outlined public health measures to combat its spread and to guide countries in their plans and strategies[9,10,11]. Thus, IPC was recognized as a pivotal measure taken by countries globally and locally in response to the pandemic[2]. Considering the significance and high burden of communicable diseases such as the annual outbreak of Lassa fever, an outbreak of Ebola in 2014, and the re-occurrence of monkeypox since 2017, these events have better positioned and equipped Nigeria with the needed experience in preparation and response to outbreaks[10,12]. IPC has been given priority as it is important in the strengthening of various health systems and response to outbreaks. Nigeria's experiences with previous outbreaks have led to the development of protocols and training of staff on IPC practices, with IPC structures, policies, programmes, and guidelines in place[11].

Given the lack of critical care beds in many areas of Africa, death rates among African healthcare workers who contract COVID-19 may be high[12]. The present threat of COVID-19 affects both the healthcare workers especially those on the frontline and also their family members[13]. Increased risk of COVID-19 among healthcare workers such as nurses, medical doctors, physiotherapists, and dentists may be associated with factors such as proximity to patients[14]. Additionally, due to their greater aerosol volume generation, some procedures, such as non-invasive ventilation, high-flow nasal cannula, and bag-mask ventilation, have been linked to an increased risk of COVID-19 infection[15]. Infection prevention and control (IPC) programmes that are well-planned and carefully implemented have been shown to reduce illness, reduce hospital stays, prevent death, and save money[16]. This study aimed to survey compliance with IPC practice among HCWs in Nigeria.

MATERIALS AND METHODS

Study tool and data collection

A cross-sectional study was undertaken among healthcare workers in Nigeria. Ethical approval was also sought and obtained. A self-administered survey questionnaire was distributed via WhatsApp as a Google form link. The study was explained to the respondents through the attached statements on the Google form and consent was sought and obtained. The study recruited those who were willing to participate by distributing the links to the google form to various WhatsApp Healthcare Groups the researchers belonged. All the respondents were asked to fill out a questionnaire on "IPC practices following COVID-19 and barriers to compliance with the IPC practices among Healthcare workers" by Jamie[17] which was adapted and utilized. Section 1 collected participants' socio-demographic data and their practice of handwashing before and during the period of COVID-19 as well as the availability of guidelines or protocols for caring for patients with COVID-19. Section 2 describes their level of compliance with IPC practices such as hand hygiene, face mask use, and physical and social distancing following COVID-19. The section consists of 13 questions that examined hand hygiene immediately on arrival at the workplace, before donning gloves, after taking them off, after touching blood, body fluids, or secretions,

before making contact with patients, between patients, after making contact with patients without gloves, before a procedure, after a procedure, after a day at work, and while wearing a surgical/N95 mask while treating patients, maintaining social and physical distance during patient contact, and lastly maintaining social/physical distance during working hours with colleagues. Data was downloaded from the google form data collection platform via Microsoft Excel and All statistical analyses were conducted using the SPSS package version 25.

RESULTS

A total of seventy-eight healthcare workers from different disciplines in different healthcare centres were recruited into the study. The majority of the respondents 47 (60.3%) were women, and the majority (85.9%) of the respondents were between the ages of 25 and 34. A total of fifty-three (69.2%) respondents had between one to five years of practice and a total of 17 (21.8%) had between six to ten years of practice. Most of the respondents work in government and private hospitals with an equal percentage of 37 (47.4%) respondents while 4 (5.1%) of respondents work for non-governmental organizations (NGOs). Most of the respondents 44 (56.4%) were medical doctors, 17 (21.8%) were physiotherapists, and 4 (5.1%) were nurses. The majority of the respondents (46.2%) work in the Federal Capital Territory. All the respondents indicated they practiced hand washing during the period of COVID-19 while 65 (83.3%) respondents surveyed said that hand washing was a component of the organizational culture before the advent of COVID-19. During the period of COVID-19, a total of 61 (78.2%) of respondents indicated the presence of a COVID-19 guideline or protocol. See Table 1

Fifteen (19.2%) of respondents indicated that they do not perform hand hygiene at work on arrival. Forty-nine (62.8%) of respondents showed that they practice hand hygiene before donning gloves. All the respondents indicated they promptly practice hand hygiene after the removal of gloves and after touching blood, body fluids, or any type of bodily secretions. Sixteen (20.5%) respondents indicated that they do not perform hand hygiene before contact with patients. Seventy (89.8%) respondents reported that they perform hand hygiene before touching each patient. All the respondents indicated they do practice hand hygiene after contact with a patient. All respondents perform hand hygiene after a procedure, and seventy respondents (89.7%) said they do so before a procedure. After the close of work, seventy-seven (98.7%) of the respondents showed that they perform hand hygiene. Fifteen (16.6%) of the respondents do not wear medical face masks during patient contact. Twelve (15.4%) indicated that they maintain social/physical distancing while treating patients. Fifty-one (65.3%) respondents showed that they do maintain social/physical distancing during working hours with colleagues. See Table 2.

Table 1: Respondents' Socio-demographic characteristics

	Variable	Frequency	Percentage (%)
Gender	Male	31	39.7
	Female		60.3
Age	< 25	3	3.8
	25 – 34	7	9.0
	≥ 45	1	1.3
Years of practice	< 1	3	3.8
	1 – 5	54	69.2
	6 – 10	17	21.8
	> 10	4	5.1
Profession	Medical Doctors	44	56.4
	Nurses/midwives	4	4.1
	Physiotherapists	17	21.8
	Laboratory scientists	5	6.4
	Radiographers	1	1.3
	Orthotist	2	2.6
	Pharmacist	2	2.6
	Ortho technologist	1	1.3
	Public health	1	1.3
	Prosthetist	1	1.3
Area of practice	Private Hospital	37	47.4
	Governmental Hospital	37	47.4
	Non-governmental	4	5.1
Do you practice hand washing during COVID-19	Yes	78	100
	No	0	0
Do you have a guideline or protocol for caring for patients with COVID-19	Yes	61	78.2
	No	17	21.8
Do you practice hand washing in your facility before the advent of COVID-19	Yes	65	83.3
	No	13	16.7

Table 2: Infection prevention and control practices (Hand hygiene, Face mask use, and Physical/social distancing) following covid-19 outbreak

Variable	Frequency	Percentage
Hand Hygiene Immediately on arrival at work	63	80.7
Hand Hygiene Before putting on gloves	49	62.9
Hand Hygiene after removing gloves	77	98.7
Hand Hygiene After touching blood, body fluids, secretions	78	100
Hand Hygiene Before contact with patients	62	79.5
Hand Hygiene Between Patients	70	89.8
Hand Hygiene After contact with patients without gloves	78	100
Hand Hygiene Before a procedure	70	89.7
Hand Hygiene After a procedure	78	100
Hand Hygiene After a day's work	77	98.7
Wearing of surgical/N95 mask during patient contact	65	83.2
Maintaining Social/physical distancing during patient contact	66	84.6
Maintaining Social/physical distancing during working hours with colleagues	51	65.3

DISCUSSION

This study assessed the compliance of HCWs to IPC practice during the earlier phase of the COVID-19 pandemic in Nigeria. HCWs are more likely to contract COVID-19. Hand hygiene has been proven as a fundamental principle in IPC practices worldwide and an integral part of patient safety programmes[18]. This study reveals that there was high compliance with the practice of hand hygiene among the HCWs before the advent of COVID-19. This might be a result of exposure of the HCWs to IPC practices from previous outbreaks such as the Ebola virus and the recurrent outbreak of Lassa fever from where hand hygiene practice has been shown as an effective strategy in breaking the transmission of the virus. This is different from the study done by Pepple and Akpan[19] where only about 30% of the general population were still adherent to safety precautions such as hand wash and the use of hand sanitizers post-Ebola (Pre COVID-19). In addition, in the study done by Martins and Osiyemi[20] among HCWs in a teaching hospital in Nigeria, the majority (80.0%) of the respondents were not compliant with hand hygiene practices for infection control post-Ebola (Pre COVID-19).

The COVID-19 pandemic ushered in several IPC practices such as hand hygiene, face mask use, social/physical distancing, among others. These non-pharmacological interventions (Wearing face masks, practicing good hand hygiene, physical/social distancing) are very crucial in the fight against COVID-19[21]. To stop the spread of COVID-19, the Nigeria Centre for Disease Control (NCDC) advised practicing good hand hygiene, particularly at the point of care, which is the intersection of the patient, the healthcare provider, and the care or treatment that involves contact with the patient or their surroundings[22]. During the early phase of COVID-19, our study showed majority of the respondents had a high compliance rate with hand hygiene practices. The result is similar to the study done by Esther et al.[23] where there was 100% compliance with hand hygiene practices. The reason might be because of the novel nature of the SARS-COV-2 and the high infectious rate and death rate associated with the virus, this now resulted in a high hand hygiene compliance rate among the HCWs.

From this study, HCWs were found to be highly compliant with the use of face masks in the prevention of COVID-19 during patient contact. This might be a product of correct IPC training that has been part of the healthcare practice in Nigeria and also the availability of PPEs within the healthcare system knowing the important role face mask use plays in curbing the transmission of COVID-19. In the study done in Ethiopia by Tekalegn et al.[24], it was revealed that the compliance level of HCWs regarding the use of face masks in the prevention of COVID-19 was very low which was attributed to poor or inadequate training. In another study done in Nigeria by Babatola et al.[25], barely half of the population sampled had good practices of face mask use which was associated with two-thirds of the population having erroneous beliefs about face shields and one-third of the population sampled having poor knowledge with the need for training and retaining of HCWs[25]. According to World Health Organization recommendation, all HCWs and caregivers working in clinical areas and COVID-19 community transmission should wear face masks to protect themselves as well as their patients from COVID-19 infection[26]. Correct and adequate training has been associated with the proper use of face masks among HCWS. In the study done by Tekalegn et al.[24], HCWs were 2.2 times more likely to correctly use a face mask. In addition, HCWs working in COVID-19 treatment centres were

2.6 times more likely to properly use their face masks compared to the HCWs working in non-COVID-19 dedicated hospitals.

Physical distancing also known as social distancing has been shown as one of the widely recognized effective ways to decrease viral transmission[27] with 2 meters (6 feet) distancing being the recommended physical distancing by public health agencies[27,28,29]. Non-adherence of HCWs to physical distancing recommendations poses a great danger to the spread of COVID-19[30]. This survey revealed a high compliance rate in physical distancing among HCWs during patient contact. This can be explained by the fact that Respiratory droplets from human-to-human have been designated as the primary route of SARS-Cov-2 transmission[31] therefore, the farther the distance from others the less likelihood of one coming in contact with the respiratory droplets.

Several interventions such as video conferencing, restructuring workrooms, and workstations, use of cognitive aids, encouraging physically distant social connections, and rewarding positive behaviours etc have been identified as a means to improve HCWs' physical distancing. In a study done by Sick-Samuels et al.[30], the use of wearable beacons helped in the decline of interactions among HCWs within 6 feet which led to improvement in physical distancing. However, maintaining social distancing during work hours can be difficult. This study recorded a little above 60% of HCWs who were able to comply with social distancing among their colleagues. In the work by Hobbs et al.[32] among Australian nurses, social distancing was more difficult than anticipated in the work environment, and working in a multidisciplinary approach healthcare system made it more challenging for the nurses and midwives. The complex nature of the healthcare system made 100% physical distancing difficult to achieve though important it poses challenges and may produce unanticipated negative consequences[29,33]. Nevertheless, several interventions have been proposed to overcome these challenges.

Limitations

This study has several limitations; thus, care should be taken when applying the findings. First, the research made use of a self-reported IPC practice of healthcare workers. Secondly, because the survey was conducted online, only people who utilize social media and the Internet were eligible to participate in the study. Third, this study did not investigate the rationale behind the use of facemasks, hand cleanliness, or physical/social distancing. Fourth, the study's conclusions may not accurately represent the situation across the entire nation due to the underrepresentation of specific regions and professions. Fifth, the study may not accurately reflect the cause-and-effect relationship between the independent and dependent variables because it is cross-sectional.

CONCLUSION

This study explained that healthcare worker's compliance to IPC practice (Hand hygiene, facemask use, and physical/social distancing) is relatively good. Nearly most HCWs in contact with COVID-19 patients have good practice of hand hygiene, compliant with facemasks use and maintenance of physical/social distancing during patient contact and among colleagues during work hours. For the areas where the HCWs are lacking, this study concludes by recommending training and retraining of HCWs to ensure consistent proper practice of hand hygiene, facemask use and physical/social distancing.

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