Original Article

COVID-19 Pandemic: A Survey of Safety Practices among Eye Care Workers in Nigeria

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Abstract

Objective: To assess safety practices among eye care workers in Nigeria during the coronavirus disease 2019 (COVID-19) pandemic. **Methods:** This research was a cross-sectional study. A structured electronic questionnaire was distributed among eye care workers (ophthalmologists, optometrists, ophthalmic nurses) across the six geographical zones of Nigeria. Information on socio-demographics, COVID-19 infection, current working conditions and safety practices were obtained. Data analysis was done using Statistical Package for Social Sciences (SPSS Inc. Chicago Illinois, USA) for windows, version 22. **Results:** A total of 236 eye care workers participated in the study; their mean ($\pm$ SD) age was 37.13 ($\pm$ 8.141) years, 125 (53%) were females, and 145 (61.4%) worked in a tertiary care hospital. All participants described COVID-19 as a viral disease and 98.3% agreed that the disease can affect the eyes. Outpatient clinic consultation was recorded as the highest (77.7%) service provided during the pandemic. Regarding preventive practices, 95% of eye care workers wore facemasks, 82.4% wore gloves during ophthalmic examination and Hazmat suit was the least used protective device (2.5%). About three-quarters (77.5%) reported feeling unsafe in their working environment and 63.9% were dissatisfied with the personal protective device provided by hospitals to eye care workers. **Conclusion:** COVID-19 pandemic presented an unprecedented challenge for eye care workers; with the practice of ophthalmology posing a high risk of transmission of the virus. Efforts should be made to provide the required personal protective devices needed for optimum protection of eye care workers in healthcare settings.

Keywords COVID-19, safety concerns, practices, eye care workers, Nigeria

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Background

The coronavirus disease 2019 (COVID-19) is a rapidly evolving disease caused by a highly infectious and potentially lethal new strain of coronavirus (SARS-CoV-2) [1]. This virus is a newly identified strain that was first reported in Wuhan, China, in December, 2019, and has since spread across the world [2]. The disease was code-named COVID-19 by the World Health Organization (WHO) on 11th February, 2020 [3]. The outbreak was initially declared a public health emergency of global concern, and then it subsequently became a full blown pandemic on March 11, 2020 [4]. Towards the end of the year 2020, there appeared to be a global and domestic resurging increase in the number of new COVID-19 infections and mortalities amongst the general population and health workers, indicating a more severe second wave of the outbreak, as anticipated.

From a taxonomical standpoint, SARS-CoV-2 like other coronaviruses (CoVs) are enveloped single stranded RNA-viruses with a positive sense. Together with the Middle East respiratory syndrome (MERS), SARS-CoV-2 are members of beta CoV sub-family (other subfamilies are alpha, gamma and delta CoVs) [5, 6]. SARS-CoV-2 had been documented to affect multiple systems or organs (ocular, gastrointestinal, neurological and dermatological) in the human body [1, 7-11].

The practice of ophthalmology requires close proximity between a patient's respiratory tract and the eye care provider; thus, creating a high risk of transmission of the COVID-19 viral infection. In addition to this, the patient population in an average eye clinic as well as the long waiting time increases the risk of disease transmission [12]. An example was the case of a Chinese ophthalmologist who got infected with SARS-CoV-2 from a patient he was managing for glaucoma who eventually succumbed to COVID-19 infection [12, 13]. The ophthalmologist is of particular risk because of the potential contact with aerosol, conjunctival secretions, and tear sac secretions [12]. As a result of this, and in line with the COVID-19 response strategy adopted by different national ophthalmological associations across the globe, The Young Ophthalmologist Forum of the Ophthalmological Society of Nigeria has highlighted a few tips that will help protect eye care workers and patients from COVID-19 infection [14].

Study Aim

This survey aimed to assess safety practices among eye care workers in Nigeria during the COVID-19 pandemic.

Methods

This study was a cross sectional quantitative survey conducted among different cadres of eye care workers (ophthalmologists, optometrists, and ophthalmic nurses) practicing in Nigeria. Ethical approval to conduct the study was obtained from the Ethics and Research Committee of the Research and Statistics Department of Katsina State Ministry of Health, Katsina, Nigeria.

The sample size for the study was calculated using a single cross-sectional study design formula based on an estimated 78% prevalence rate of the knowledge and perceptions of COVID-19 among health care workers at 95% confidence interval, 5% precision, and 10% non-response rate [15]. Thus, the minimum sample size for this study was 293 participants.

The estimated total population size of eye care workers in Nigeria was obtained by contacting the various heads of the professional bodies of eye care workers to get an approximate number for each group: ophthalmologists, optometrists, and ophthalmic nurses.

Data collection was done within three months (June, 2020, to August, 2020). A non-probability sampling (convenience sampling) technique was used in the data collection process, whereby the investigators contacted eye care workers in their catchment geopolitical zones.

Questionnaires were sent out to potential participants through emails and posts of the hyperlink of the questionnaire via WhatsApp social media. At unspecified intervals, reminders were sent to encourage participants to take part in the survey. The questionnaire had a consent section (where participants were required to fill before proceeding with the survey). The semi-structured questionnaire was composed of sections on socio-demographics, assessment of knowledge on the COVID-19 disease, current working practices, practice on the use of personal protective device (PPD), concerns on availability and use of PPD. To ensure confidentiality, the questionnaire was anonymous. Data analysis was done using Statistical Package for Social Sciences (SPSS inc. Chicago Illinois, USA) for windows, version 22. Continuous data were summarized using means and standard deviations while categorical data were presented as frequency and percentages.

Results

A total of 236 eye workers, out of about 700 eye care workers who received the link, responded to the electronic questionnaire, giving a response rate of 33.7%. There were 111 (47%) males, and 125 (53%) females, with a male-to-female ratio of 1:1.13 and age range of 21 – 72 years (mean age ($\pm$ SD): 37.13 ($\pm$ 8.141) years). All geopolitical zones of the country were represented in this survey, with North-West Nigeria being the most represented (67, 28.4%). Ophthalmology residents had the highest number of respondents (83, 35.2%). The majority of the respondents were working in the tertiary hospital (145, 61.4%). Over two-third (173, 73.3%) had less than 10 years of working history as eye care providers (Table 1).

Table 1. Socio-demographic characteristic of respondents

Characteristics (N = 236)	Frequency	%
Age category (years)		
<= 30	47	19.9
31 – 40	127	53.8
41 – 50	39	16.5
51 – 60	20	8.5
61+	3	1.3
Gender		
Male	111	47.0
Female	125	53.0
Geographical Regions		
North –Central	27	11.4
North –East	14	5.9
North –West	67	28.4
South- East	30	12.7
South- South	57	24.2
South- West	40	16.9
Eye Care Provider		
Consultant ophthalmologist	46	19.5
Ophthalmic Nurse	42	17.8
Ophthalmology Resident	83	35.2
Optometrist	65	27.5
Health Facility		
Primary healthcare facility	2	0.8
Secondary healthcare facility	89	37.7
Tertiary hospitals	145	61.4
Work experience (Years)		
0-10 years	173	73.3
11-20 years	48	20.3
>20 years	15	6.4

All respondents described COVID-19 as a viral disease and 232 (98.3%) attested to possible ocular involvement (Table 2).

Table 2. Respondents' views on COVID-19 and the eyes

Type of eye care provider	Do you think COVID-19 can affect the eyes?		Total (%)
	Yes (%)	No (%)	
Consultant ophthalmologist	46 (19.8)	0 (0)	46 (19.5)
Ophthalmic nurse	39 (16.8)	3 (1.3)	42 (17.8)
Ophthalmology resident	83 (35.8)	0 (0.0)	83 (35.2)
Optometrist	64 (27.5)	1 (0.4)	65 (27.5)
Total	232 (98.3)	4 (1.7)	236 (100.0)

Among the eye care services provided by the respondents, out-patient consultation recorded the highest (185, 77.7%), followed by refraction and spectacles reviews (163, 68.5%), and closely followed by eye emergencies (140, 58.8%); the least recorded service was health education (60, 25.2%) (Figure 1).

Figure 2 shows the frequency distribution of the protective devices used by the respondents during the COVID-19 pandemic. The majority of the respondents (226, 95%) used face masks while the least used protective device was Hazmat suit 6 (2.5%).

Figure 1. Practice of eye care workers during the COVID-19 pandemic

Figure 2. The distribution of protective devices used by the respondents

Table 3 shows that 77.5% of respondents did not feel safe in their work environment during this pandemic

Table 3. The perception of safety in the workplace among respondents during the COVID-19 pandemic

Category of eye care provider	Do you feel safe working in the health care environment during this pandemic?		Total (%)
	Yes (%)	No (%)	
Consultant ophthalmologist	11 (4.7)	35 (14.8)	46 (19.5)
Ophthalmic nurse	10 (4.2)	32 (13.6)	42 (17.8)
Ophthalmology resident	9 (3.8)	74 (31.4)	83 (35.2)
Optometrist	23 (9.7)	42 (17.8)	65 (27.5)
Total	53 (22.5)	183 (77.5)	236 (100.0)

Figure 3 shows distribution of the respondents who responded to questions on satisfaction with available PPDs in the places of work, with majority-151 (63.9%) not satisfied.

Discussion

This online survey determined the safety practices deployed amongst eye care workers during the COVID-19 pandemic in Nigeria. All respondents in this study described COVID-19 as a viral disease and 98.3% attested to possible ocular involvement.

Among the eye care services provided; out-patient consultation recorded the highest, followed by refraction and spectacles reviews, and closely followed by eye emergencies; the least recorded service was health education. The small percentage

seen on health education may be a reflection of the number of ophthalmic nurses in this survey compared to other eye care workers (ophthalmologists and optometrists) since this cadre of workers is responsible for eye health education in healthcare facilities.

Figure 3. Level of satisfaction of respondents with the availability of personal protective devices provided by the hospitals

The authors found that among the PPDs used during eye examination, facemask was the predominant protective device used while Hazmat suit was the least. A study

has also reported the wearing of facemasks as the most practiced preventive device used by ophthalmologists during the COVID-19 pandemic [16].

An interesting point noted in this study was the high proportion of respondents who reported that they felt unsafe working in the hospital during the pandemic. This could be attributed to the mode of the transmission of the disease which is through contact by respiratory droplets with an infected person and through indirect contact with instruments that have had direct contact with the conjunctival surface of an infected patient, since most ophthalmic practices such as slit lamp examination, direct ophthalmoscopy, refraction and ophthalmic surgeries require proximity with patients this perceived anxiety is not surprising [17,18]. Furthermore, the perceived anxiety amongst the respondents may be due to the shortage of provision of protective devices which was reported in most hospitals. A study done by Walton et al. also reported that anxiety in physicians during the coronavirus outbreak was related to perceptions of inadequate and insufficient protection by the employer and state [19].

This study also highlights the level of satisfaction of eye care workers in Nigeria with regard to the availability of PPDs. About two-third of the respondents were dissatisfied with the low level of availability of PPDs in their hospital. This finding corroborates with the study in Ethiopia which reported an overall low level of satisfaction of healthcare practitioners with the availability and use of appropriate PPDs in their hospital [20].

This study has its limitations. This study adopted a non-probability sampling technique which may have introduced selection bias, poor response rate. Secondly, a formal and accessible database of eye care workers in Nigeria, which may have improved participants selection, follow up and response rate, was not used in this study as such was not available in the country at the time of the data collection process. Thirdly, the questionnaire could not quantitatively extract estimates of services offered prior to the COVID-19 outbreak, during the COVID-19 outbreak peak period, and subsequent periods of the pandemic. Nonetheless, this study had a fair attempt at representing eye care workers distributed across all the geographical zones of the country, making this study have some extent of national coverage despite the small sample size.

Conclusion

The COVID-19 pandemic presented an unprecedented challenge for eye care workers, with the practice of ophthalmology posing a high risk of transmission of the virus. Efforts should be made to optimize safety practices that will reduce workplace-related infections for eye care workers and other healthcare workers during this on-going pandemic and beyond.

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