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Knowledge and Preferred Clinic Practices of Workers in a Tertiary Eye Hospital in Nigeria with Reference to COVID-19 Pandemic

Michael Chuka Okosa,[1,2] Akunne Ijeoma Apakama,[1,2*] Arinze Anthony Onwuegbuna,[1,2] Chukwudi Charles Uzozie,[1,2] Miriam-Benigna Chika Amobi,[1] Chinwe Alice Uzuke[3]

[1]Guinness Eye Centre, Onitsha, Nigeria
[2]Department of Ophthalmology, Nnamdi Azikiwe University, Nnewi campus, Nnewi, Nigeria.
[3]Department of Statistics, Nnamdi Azikiwe University, Awka, Nigeria

***Corresponding Author:**
Akunne Ijeoma Apakama
Guinness Eye Centre, Onitsha, Nigeria

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Abstract

INTRODUCTION: Coronavirus disease (COVID-19) is a pandemic with high transmission rate in adults. Health workers when infected with COVID-19 pose a risk of transmission to others. With the increasing number of COVID-19 cases worldwide, it is vital to maintain preventive measures especially among healthcare workers who are at high risk of contracting this infection. Continuous supply of personal protective equipment is of paramount importance.

AIM: To determine knowledge concerning transmission and preventive measures as regards COVID-19 by eye healthcare workers and ascertain the degree of practice of these preventive measures.

MATERIALS AND METHOD: A survey of employees in a tertiary eye care centre by means of self-administered semi-structured questionnaire.

RESULTS: Seventy-nine participants comprising 58 females, 21 males. Their ages ranged from 25 to 68 years (mean age of 41.34 ± 10.69 years). Seventy-nine (100.0%) participants were aware of the COVID-19 pandemic, with each aware of at least one route of transmission and methods to prevent transmission. Electronic and other mass media were the dominant sources of information 68 (86.0%). Tools and measures provided by the health facility were considered inadequate, and majority 50 (63.3%) of staff considered clinical duty should cease if adequate protective tools and measures are not provided. Face masks caused discomfort to majority of the participants 52 (65.8%). Life insurance coverage for all staff at risk was advocated by 86.1%.

CONCLUSION: Knowledge of COVID-19 amongst healthcare workers in our environment is high, but with poor supply of personal protective equipment. Adequate COVID-19 protective measures and incentives should be provided for healthcare workers in Nigeria.

Keywords: infection, prevention, motivation, hand washing, face mask, eye clinic

INTRODUCTION

COVID-19, otherwise known as coronavirus disease, caused by RNA virus was first isolated in 1960 from the respiratory tract of a child with upper respiratory tract infection.[1] It caused an epidemic respiratory disease in Wuhan, China from December 2019.[2] Subsequent spread to other countries caused it to be characterized by the WHO as a pandemic.[3]

Prior to 2019, variants of the virus caused respiratory, gastro-intestinal and other diseases in animals,[4–6] epidemic respiratory diseases in humans in 2003 called the Severe Acute Respiratory Syndrome (SARS) infections, and the Middle East Respiratory Syndrome (MERS).[7] The new coronavirus, causing severe disease in humans, was referred to as the novel

coronavirus by the World Health Organization (WHO) in 2019, COVID-19 (coronavirus disease-2019) and given the scientific name of SARSCOV-2 (Severe Acute Respiratory Syndrome Coronavirus-2). It was declared a global emergency.[8] This virus was found in bats in Wuhan wet market, and the cluster of early infection traceable to the wet market suggests that this zoonotic infection crossed over to humans in the market and subsequently began to spread.[9] The SARS-COV-2 enters the human body through the respiratory route, eyes and mouth as droplets and aerosol projected during speaking, coughing, sneezing, spitting and even breathing.[9,10] Furthermore, droplets bearing viable organisms may contaminate surfaces, furniture, physical money, clothes and body and transmit infection.

After infection, a period of five to twenty four days incubation period may occur before a person starts manifesting symptoms.[11,12] Affected people especially young and physically healthy people may be asymptomatic or manifest minor, moderate or severe symptoms.[13] Severely affected people are often above 50 years of age and those with pre-existing health conditions that include diabetes mellitus, heart conditions, kidney failure, asthma and hypertension. The disease affects multiple organs and body systems. Clinical features include sore throat, dysphagia, cough and chest pain, respiratory distress and marked hypoxia. Other findings are high fever, bone and muscular pains, loss of taste and smell, headaches and diarrhoea. Severe manifestations lead to respiratory failure and death.[12–15] Because health workers like doctors and nurses are front line care givers, in ill-health their engagement in the care of people infected with the disease confer on them higher exposure risks associated with aerosol borne infections like COVID-19.[16] Consequence of this is that proportionately larger numbers of them than other occupations often suffer mortality and morbidity in aerosol mediated transmissions in epidemics. A higher degree of protection is therefore necessary for health workers whose function must bring them into contact with known and unknown carriers of the disease.[17]

Measures adopted for primary prevention of transmission in COVID-19 include various forms of body coverings called Personal Protective Equipment (PPE). Other measures include hand washing with soap and water, wearing or face masks, physical distancing of at least two meters away from another person, social distancing which reduces the number of social situations a person is exposed to and its duration, and limiting the number of people assembled in a particular location at the same time. This includes refraining from handshaking, hugging and cheek-kissing and use of alcohol-based hand sanitizers. In public places and hospitals, cleaning of surfaces, like tables, chairs, doors and handles, toilets must be undertaken regularly to reduce virus load.[18–20]

COVID-19 was first reported to have entered Nigeria through Lagos, 8 February 2020 through an Italian man, a passenger in an airplane from Milan.[21] On isolation he subsequently recovered. Contact tracing revealed he transmitted the disease to a driver of a motor vehicle he used, who later died. Successive cases sprang up in different Nigerian towns and cities. Absence of widespread tests makes it difficult to be categorical about the spread and other useful parameters of the disease in Nigeria. Various public health measures were adopted in Nigeria to control the epidemic. In Anambra State of Nigeria these measures included shutting of schools, markets and civil servants being ordered to work from home.[22,23] These precautionary measures were lifted after about three months in spite of seeming high prevalence of the pandemic. There was inadequate provision of preventive measures for health workers, and no program to rapidly vaccinate them. In the health centre this study was conducted, they were expected to carry on normal clinical duties. This appeared to disregard the fact that all patients were potentially infective and could transmit the disease to health workers especially those that come into contact with their eyes, nose and throat.[17,24] Death or severe illness of hospital staff at periods and places of epidemic pose severe loss to capacity of the hospital and healthcare system to function. It was therefore important to ascertain the knowledge of hospital staff concerning preventive measures, and their practical application of such knowledge concerning the COVID-19 to avert infection. It was also important to discover incentives/motivation for healthcare workers to continue working during the pandemic.

AIM

To determine knowledge concerning transmission and preventive measures as regards COVID-19 by eye health workers and ascertain the degree of practice of these preventive measures, staff desired incentives to

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continue work, and expectations in case of infection or death as occupational hazards.

MATERIALS AND METHODS

Participants are staff of Guinness Eye Centre Onitsha (GEC), a tertiary care centre of Nnamdi Azikiwe University Teaching Hospital Nnewi.

Sample size was calculated using prevalence rates generated by a cross sectional general population survey done March 2020 in Iran by Erfani and his colleagues[25] who detected a knowledge score of 90% concerning COVID-19.

A confidence interval of 95% (1.96) was chosen and precision level of 5% in present study.

Using formula[26] $N= pq/(E/1.96)^2$
Where N = minimum sample size; P = maximum expected prevalence (90%); Q = 100-P; E = margin of sampling error tolerated (5%). Calculated sample size is thus determined to be 138.

However the population to be surveyed in current study is 96 persons and thus Cochran's formula for determining sample size in small samples using result obtained from calculation for large samples was used.[27] SS = SL /1+ (SL -1)/N, where N is population size (96); SL = sample size determined for large/infinite sample (138); SS = adjusted sample size for small population. Substituting the figures, the adjusted minimum required sample size was calculated to be 57. Due to the possibility of non-response, the entire study population of 96 persons were drafted into the study.

STUDY DESIGN

This is a survey conducted in October 2020 using a self-administered semi-structured questionnaire given to all members of staff of the tertiary eye care centre. Information obtained included the sociodemographic, knowledge of COVID-19, preventive measures practised during the pandemic and challenges encountered, available protective measures provided by the hospital, and suggestions on motivation for healthcare workers during the COVID-19 pandemic.

Data analysis

Generated data was entered into and analysed with Statistical Package for Social Sciences (SPSS) version 23 software.

Ethical approval

Written informed consents were obtained from the participants. This study observed all the relevant prescriptions of Geneva Convention concerning study on human subjects and was approved by the Nnamdi Azikiwe University Teaching Hospital Medical and Health Research ethics board. (Approval number NAUTH/CS/66/VOL.13/VERIII/69/2020/057).

RESULTS

Seventy-nine people responded to the questionnaire and were made up of 58 (73.4%) females and 21 (26.6%) males. Their age groups, sex, and their profession within the hospital are shown in Table 1.

All (100.0%) participants have heard of COVID-19. Sources of information on COVID-19 were from electronic media and the internet to 68 (86.0%) participants; hospital organized enlightenment was a significant source of information to 43 (54.4%) participants; conversation among professionals and other people was source among 38 (48.1%) participants, and church programs was a source of information to 5 (6.3%) participants. Forty-one (51.9%) people gave multiple responses.

On the routes of COVID-19 infection into the body, 57 (72.2%) participants recorded the mouth, 59 (74.7%) the nose, 51 (64.6%) the eyes, and 12 (15.2%) participants recorded the skin to be ab entry route of the COVID-19 infection into the body. However, 6 (7.6%) participants documented COVID-19 infection to be sexually transmitted. All (100%) participants correctly identified at least one route of entry of COVID-19 infection. There were 45 participants who gave multiple responses.

Measures to prevent COVID-19 infection as perceived and practised by the eye health workers are presented in Table 2. All (100.0%) members of staff correctly identified at least one preventive measure against COVID-19 infection, with 71 (90%) participants knowing all preventive measures listed in Table 2.

Seventy-six (96.2%) participants recorded challenges with the use of preventive measures and these are shown in Figure 1. Discomfort with the use of face masks was the commonest difficulties with the preventive measures experienced by the health workers 52 (65.8%).

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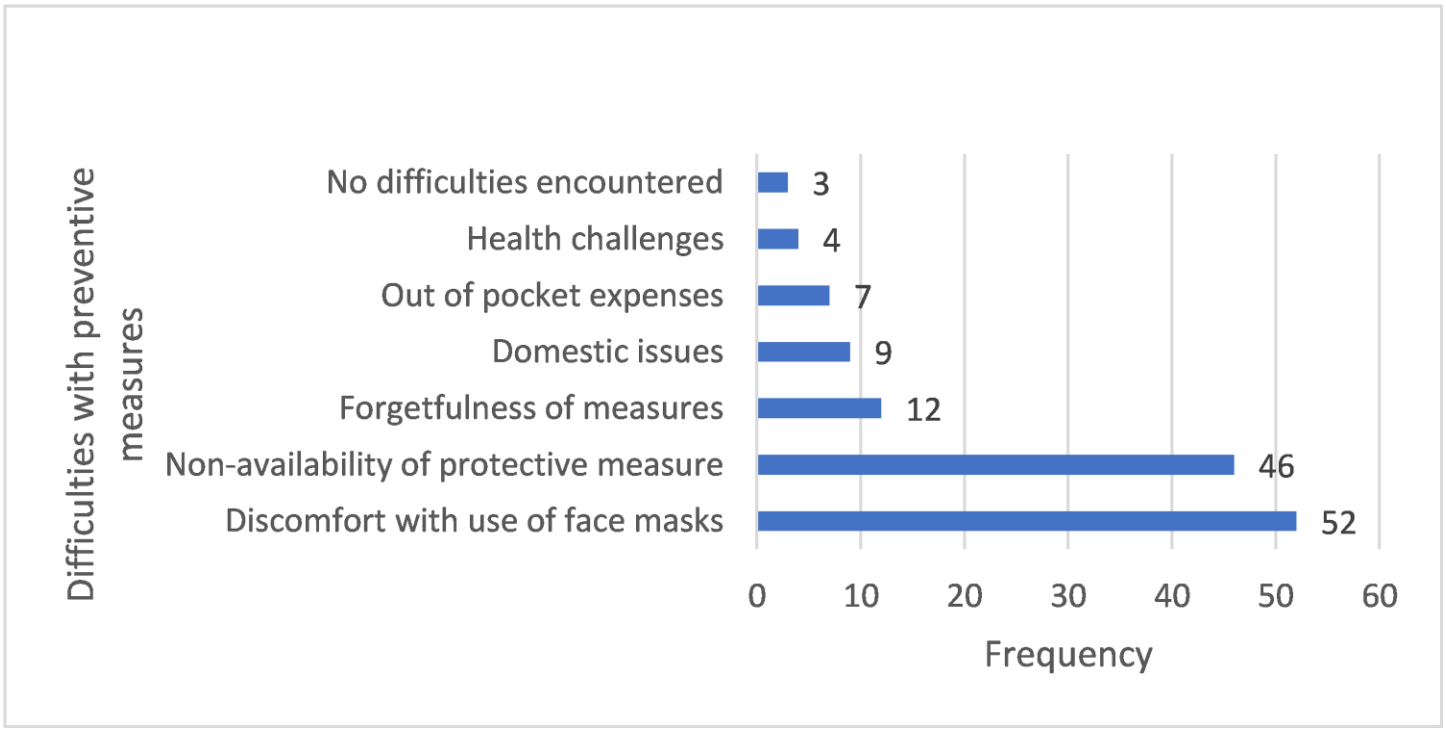

Figure 1: Challenges with deploying protective measures.

Table 3 shows inadequate provision of tools for protective measures and enforcement of other preventive measures by the hospital as assessed by the staff. Sixty (75.9%) participants reported inadequacy in the supply of facemasks in the hospital.

In a situation where no protection is provided by the hospital, action to be taken were: do not work till necessary things are provided by 50 (63.3%) people; work if it is emergency by 28 (35.4%); carry out all clinical duties on all patients who present was desired by 7 (8.9%); carry out all clinical duties only those that do not look sick was desired by 4 (5.1%); attend to only patients who look sick was advocated by 3 (3.8%). Motivations/Incentives as suggested by the health workers are documented in Table 4.

DISCUSSION

Data from this survey (Table 1) disclosed that 63(79.7%) members of staff are above 30 years of age. All (100%) have heard of the COVID-19 pandemic. This compares to a survey in Iran by Erfani and colleagues among the general public where 90% of the population where aware of the pandemic.25 The dominance of electronic and mass media as the major source of information noted in current study was also noted in Iran.25 The pre-eminence of electronic over traditional methods of information on professional or health matters, for example instruction from older professionals, and hospital-based instruction, as displayed in this study has profound and wide ramifications explored by other workers.28,29 Advantages may include a fast and wider capacity to disseminate useful information as disclosed in current study, but a disadvantage is that such information may not be vetted by appropriate experts, and consumers are unable to authenticate their quality and source. Public health and education systems should explore ways to use this cost-effective electronic media for dissemination of information.

Although all (100%) participants correctly identified at least one route of entry of infection of eye, nose or mouth. Routes of infection identified by participants corresponds to what other investigators have established in population-based survey.14,15

Methods of prevention of infection as displayed in 'Table 2' demonstrate a high level of understanding of measures to decrease possibility of infection. These methods have been studied by several investigators and are currently advocated.18–20 At least one

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preventive measure was correctly identified by all members of staff, and 71(90%) knew all items in prevention listed in 'Table 2'. This demonstrates efficiency of health education measures deployed in this pandemic in imparting needed information. There were no false items volunteered by respondents as preventive measures for this disease, in contrast to frequently observed non-orthodox beliefs and measures regarding health matters in most areas in Africa.30

'Table 2' also highlights that understanding and mental assent to prescribed health promotive and disease prevention measures concerning COVID-19 as detailed outstrips the subjective practice of the preventive measures. This has been noted in other health situations.31,32 In contrast to comprehension of disease prevention activities concerning COVID-19 in 71(90%) participants, none practiced all of them. Of all the specific preventive activities detailed, only physical distancing was practiced by 59(74.7%), all others by less than fifty percent. This physical distancing is unlikely to apply evenly in the eye centre considering the different services provided by these professionals. Poor adherence to public health preventive measures have been documented by researchers in other situations. Current result compares with a study of Congolese students in which 99% where aware of HIV, and that using condom breaks transmission, still 71% practiced casual sex without condom even though condoms were available and affordable.31 It is further illustrated by a survey of physicians in a city in Iraq that disclosed that 26.5% practiced cigarettes smoking in spite of knowledge of the dangers and health consequences of the practice.32

'Figure 1' illustrates some reasons why health care staff do not comply with preventive measures. Challenges of various types were claimed by 76(96.2%) of participants. Only three (3.8%) out of 79 participants had no challenges about accessing and deployment of tools for the prevention of COVID-19 infection. This is probably because they are accustomed to use of these in their professions and are highly motivated to disregard or ignore or overcome the challenges because of the benefit of using them as against the risk of not doing so. This level of difficulties complained of by health workers must induce a reflection of how much more difficulties the general population must encounter in practicing preventive activities concerning COVID-19.

Difficulty with face mask may also be related to the type of masks used. Surgical masks, even when combined with the N95 were not noted to cause hypoxia or hypercapnia.33 Types of discomfort experienced by participants may not however be caused by hypoxia but related to unaccustomed covering of face with foreign material, irritation, rise in facial temperature, more force needed in breathing, impedance of communicative facial expression and speech and others. Among people using even good quality masks for extended period discomfort have been documented which included headaches.34,35 The reason why knowledgeable health care staff do not practice well understood disease preventive measures is a subject that needs further research.

'Table 3'Staff observation that provision of soap and water for hand washing (51.9%), use of infrared thermometer for temperature check (44.3%), and other measures that were above 50%, these were still considered inadequate for COVID-19 prevention.

Because of perceived inadequate provision for protection by health care authorities and insistence that normal work continues, it was perceived that morbidity and mortality could occur among them and therefore staff advocated various actions listed in 'Table 4'. Older age groups and front-line workers made up of physicians, nurses, laboratory staff and optometrists, were predominantly represented among the majority 50(63.2%) that opted for avoiding clinical services until full protection is provided, while few administration personnel and other cadres agreed to this view. Thus, it appears that suggestion to offer unprotected contact with patients was in each professional group inversely related to the degree to which such contact would be undertaken by the professional group concerned. This observation has implications that policy and practice decisions may vary depending on who makes the decision- front-line workers or non-frontline workers.

Motivation of workers is important and useful for output of services; various methods could be required according to specific situations.36 Staff demands in current study in 'Table 4'is reasonable. Motivating staff by providing suitable incentives of material provision and deploying preventive measures to lower risk incurred in carrying out the requisite task must be part of the planning and policy measures deployed.

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This applies to health care staff that cares for people in current COVID-19 pandemic.

CONCLUSION/RECOMMENDATION

Knowledge concerning cause, mode of spread and methods of control of COVID 19 pandemic is adequate among staff of the health centre. Preventive practices are not adequately provided or practiced by the individuals due to various challenges. Health facilities and authorities should provide adequate protective measures and motivation to enable health care personnel carry out their duties. Decision making concerning health matters should involve those in the frontline, who are expected to bear the consequences of these decisions good or bad.

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Table 1: Sociodemographic characteristics of the participants

Variable	Number	Percentage (%)
Age (Years)		
21-30	16	20.3
31-40	28	35.4
41-50	16	20.3
>50	19	24.0
Sex		
Male	58	73.4
Female	21	26.6
Profession		
Ophthalmologists	14	17.7
Nurses	18	22.8
Optometrists	6	7.6
Medical record staff	9	11.4
Administration staff	16	20.3
Pharmacist	4	5.1
Laboratory employees	5	6.3
Account personnel	2	2.5
Hospital attendants	5	6.3
Total	**79**	**100.0**

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Table 2: Preventive measures practiced against COVID-19 infection

Preventive measures	Acceptable practice* Frequency (Percentage)	Actual practice† Frequency (Percentage)
Physical distancing of at least 2 meters	70 (88.6)	59 (74.7)
Hand washing with soap and water	67 (84.8)	39 (49.4)
Proper use of face mask in public	68 (86.1)	38 (48.1)
Wearing of eye goggles	51 (64.6)	23 (29.1)
Avoiding handshakes and hugs	62 (78.5)	30 (38.0)
Self-isolation	55 (69.6)	17 (21.5)
Wearing of hand gloves	66 (83.5)	25 (31.6)
Frequent cleaning and decontamination of surfaces	54 (68.4)	14 (17.7)
Use of hand sanitizers with alcohol	69 (87.3)	19 (24.1)

*Preventive measures perceived to be acceptable by the participants during COVID-19 pandemic

†Preventive measured practised by the health workers during COVID-19 pandemic

Table 3. Provision of PPE* and other protective measures by the hospital

Preventive Measures and Tools	Inadequacy provision (Percentage)
Face mask	60 (75.9)
Hand gloves	63 (79.7)
Alcohol based hand sanitizer	66 (83.5)
Soap and water in many places	41 (51.9)
Decontamination of surfaces	34 (43.0)
Use of infra-red thermometer	35 (44.3)
Appropriate physical distancing,	44 (55.7)
Wearing of goggles	20 (25.3)
PPE*	30 (38.0)

*PPE-Personal Protective Equipment

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Table 4. Motivation/Incentive for Health Care Staff during COVID-19 pandemic

Motivation /Incentives	Frequency/Percentage
Free treatment of an infected staff and material provision for their dependent relatives during the period of their loss of earnings or death from the disease	54 (68.4%)
Life insurance covers for all staff at risk	65 (86.1%)
Appropriate hazard allowance or pay enhancement for all staff at risk	57 (72.2%)
Payment of a lump sum to next of kin in case of death of staff	44 (55.7%)
No need for any extra staff incentives apart from regular staff emoluments.	1(1.3%)

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