



Caregivers' Perception and Practice of Infection Prevention and Control for COVID-19 at a Tertiary Centre, Southern Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author LEY designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author GKE managed the analyses of the study and the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Introduction: The World Health Organization had recommended a multi-prong approach for the prevention and control of COVID-19, which has risen into a major global public health challenge. Government of nations are to disseminate information on these protective measures to the general public to mitigate the spread of the disease. However, people's adherence to these preventive strategies is essential to guarantee success.

Objective: To appraise the perception and practice of recommended measures for the prevention and control of COVID-19 by caregivers of children attending the University of Port Harcourt Teaching Hospital.

Methodology: This descriptive cross-sectional study was done among parents/caregivers of children attending the Children's Out Patient clinics, wards and emergency room of the Department of Paediatrics at the University of Port Harcourt Teaching Hospital, between August and

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September 2020. Information obtained using a structured investigator-administered questionnaire included bio data and perception about COVID-19 while practice of its preventive measures was observed. Data were analysed using SPSS version 25.

Results: All participants (161) have heard about COVID-19, mainly through the television and radio. The majority of them (n=141, 87.6%) knew that a combination of measures is needed for its prevention. More than half of participants (59%) washed their hands with water and soap provided, 89% of them had a facemask, a lesser proportion (58%) wore the mask and an even lesser proportion (28.6%) of them wore it properly. There was no significant difference between level of education or occupation of caregivers and proper wearing of the facemask.

Conclusion: Though the awareness of COVID-19 was high, there was a gap between perception and practice of its preventive measures. Health education and innovative local strategies are recommended, to help improve the people's acceptance of, and compliance to the stipulated multi-prong preventive measures.

Keywords: Caregivers; Perception; Practice; Prevention and control of COVID-19; Southern Nigeria.

1. INTRODUCTION

The coronavirus disease (COVID-19), which is caused by a new strain of coronavirus (SARS-CoV-2), was first identified in Wuhan, China, and reported to the World Health Organization (WHO) in December 2019 [1,2]. A month later, it had evolved to a global health emergency and three months later, in March 2020, the WHO declared COVID-19 a global pandemic as the virus spread to over 200 countries [1-4]. With a global mortality of about 37,109,851 as at 10 months after being reported to the WHO, COVID-19 had placed an unparalleled burden on the health system while posing major public health challenges worldwide [2,5,6].

The COVID-19 is a highly transmittable and pathogenic viral infection which can be transmitted by people with the virus coughing or sneezing, releasing tiny contaminated droplets into the air, putting anyone within range in danger of inhaling them. These droplets can travel more than a meter from the infected person, allowing them to settle on any surfaces ready to be transferred to anyone that touches those surfaces [1,2,7]. This knowledge guided the development and adoption of simple interventions, mainly centered on good hygiene to protect self and others, and slow or prevent the virus' spreading. They have been found to be effective in controlling similar respiratory diseases outbreak in the past, and are now being used as one of the mainstay of control of the pandemic [8]. They include: avoiding touching the face; washing hands regularly; wearing a mask; practicing respiratory hygiene; maintaining social distancing; seeking medical care early if symptoms develop and staying informed [9,10].

It was expected that the COVID-19 pandemic would prove difficult to be controlled in Sub-Saharan Africa as most countries have poor health systems and inadequate health infrastructures [4,6,11]. However, though the disease continues to spread across the world, with increasing morbidity and mortality, Africa is currently the least affected of all the continents [5,6]. Nevertheless, due to inadequate testing capacity in many countries, the true number of cases may remain undetected, which makes it challenging to conclude the true epidemiology of COVID-19 in the continent [1].

At the wake of the pandemic, the WHO listed Nigeria among other 13 African countries identified as high-risk for the spread of the virus, whereas its first case of COVID-19 was reported in February 2020 and since then many confirmed cases have been reported in many States across the country [12-14]. Consequently, the Nigerian Centre for Disease Control (NCDC) was saddled with the responsibility of setting up and managing a Coronavirus Preparedness Group, to mitigate the impact of the virus in the country [15]. Therefore, with the aim to quickly improve the awareness, knowledge and attitude of the Nigerian populace and convey key messages in line with WHO/NCDC recommendations on how to protect self and others from COVID-19, the group championed the production of manuals, leaflets, and jingles in English and various local languages, which are still being widely communicated to the public [9,16,17]. However, people's adherence to these preventive strategies is essential to guarantee success.

Several authors have reported the knowledge and practice of infection prevention and control of COVID-19 among health care workers and the

public. However, there is a dearth of literature concerning caregivers, who provide invaluable service and support to patients in health facilities. This study was thus conducted to appraise the perception and practice of some of the recommended measures for the prevention and control of COVID-19 by caregivers of children who are brought to the Children's Outpatient clinics, wards and emergency room of the University of Port Harcourt Teaching Hospital for health care, as it will be a reflection of their understanding and complying with the widely disseminated preventive measures.

2. MATERIALS AND METHODS

This study was a descriptive cross-sectional survey carried out between August and September 2020, amongst parents/caregivers of children who were brought to the Children's Outpatient clinics /wards and emergency room of the Department of Paediatrics at the University of Port Harcourt Teaching Hospital (UPTH) for care and/or follow-up visits.

The UPTH is an 800-bedded federal tertiary health institution serving Rivers and the neighbouring States in southern Nigeria. It also serves as a general/referral centre for children in Port Harcourt and its environs. The Children's Outpatient clinics are run on week days, while the wards and emergency room are opened 24/7. The department caters for children aged 0–17 years.

With the advent of COVID-19, the Department of Paediatrics in UPTH put in place measures for infection prevention and control (IPC) of Covid-19, in accordance with the NCDC recommendations [16,17]. They comprised hand washing facilities with running water and soap at the entrance of the department with a banner above it bearing written and pictorial instructions to wash hand with water and soap and wear a face mask that covers the nose and mouth before proceeding to its various service points. Other measures included placement of the chairs for clients 1meter apart from one another at the clinics' waiting area, placement of posters summarising the COVID-19 IPC measures (use of face mask, social distancing, avoidance of body contacts with other people, cough/sneezing etiquette) in strategic places throughout the department including the consulting rooms, for the benefit of both clients and health care workers. Furthermore, at the beginning of work each day in the various service points, the most

senior nursing staff gives a health talk to the clients, which includes IPC of COVID-19 in addition to the day's topic of health talk.

An investigator-administered questionnaire was used to obtain information from the parents/caregivers. Information obtained included socio-demographic data, their perception of COVID-19, their practice of using the soap and water provided at the entrance into the department, their use of hand sanitizers, while the investigator observed the way they were wearing their mask if it was correctly worn or not and their practice of social distancing. Investigators sought the help of interpreters to interact with participants who did not speak and/or understand the English or Pidgin English languages.

Data were entered into a Microsoft Excel Spread Sheet and analyzed using SPSS version 25.0. A p-value of < 0.05 was considered significant. Results are presented using tables and text.

3. RESULTS

One hundred and sixty-one parents/caregivers participated in the study. The majority of them were in their thirties (42.2%), had tertiary education (56.6%) and were traders (44.1%) and civil servants (14.3%) (Table 1).

All participants of this study have heard of Covid-19, and most of them (88.2%) heard about it through radio and/or television. Most of them (88.8%) believed the Covid-19 is real and knew that it is caused by a virus (94.4%), which can be prevented with the concomitant use of face mask, regular hand washing, social distancing and use of alcohol based sanitizers (87.6%) (Table 2).

The majority (59%) of participants washed their hands with water and soap provided, and 80% of them practiced social distancing. Whereas 89% of parents/caregivers had a facemask, a lesser proportion (58%) wore the mask and an even lesser proportion (28.6%) of them wore it properly. In addition, 69.6% of them had their personal sanitizers (Fig. 1).

Considering the educational level of parents/caregivers, a higher proportion of participants with tertiary level of education (78.2%) wore their face masks properly, as well as traders (41%) when occupation was considered. However, the difference in both

groups was not significant ($P=.13$ and 85 respectively) (Table 3).

Though the majority of participants (59%) washed their hands with the water and soap

provided, more than half of those who did not have a sanitizer did not wash their hands (59.2%), they represented 18% ($n=29$) of participants. The difference was statistically significant ($P=.001$) (Table 4).

Table 1. Characteristics of respondents

Age group of caregiver	Number (n=161)	Percent
Less than 20 years	0	
20-29	32	19.9
30-39	68	42.2
40-49	50	31.1
50 and above	11	6.8
Educational level of caregiver		
None formal	3	1.9
Primary	6	3.7
Secondary	56	34.8
Tertiary	96	59.6
Occupation of caregiver		
Trader	71	44.1
Civil servant	23	14.3
Teacher	19	11.8
House wife	19	11.8
Unemployed	8	5
Nurse	6	3.7
Administration staff	4	2.5
Student	3	1.9
Physician	2	1.2
Scientist	2	1.2
Others (Lawyer, accountant, farmer, security personnel)	4	2.5

Table 2. Knowledge of respondents concerning Covid-19

Have you heard of Covid-19?	Number (n=161)	Percent
Yes	161	100
No	0	0
How did you hear about it?		
TV/radio	142	88.2
Social media	11	6.8
Internet	4	2.5
Community/neighbour	4	2.5
Is Covid-19 real?		
Yes	143	88.8
No	15	9.3
I don't know	3	1.9
Covid-19 infection is caused by		
A virus	152	94.4
A bacteria	7	4.4
A parasite	1	0.6
I don't know	1	0.6
The following are needed for the prevention of Covid-19 infection		
Face mask only	9	5.6
Hand washing only	0	0
Social distancing only	0	0
Use of sanitizers only	0	0
All of the above	141	87.6
None of the above	7	4.3
I don't know	4	2.5

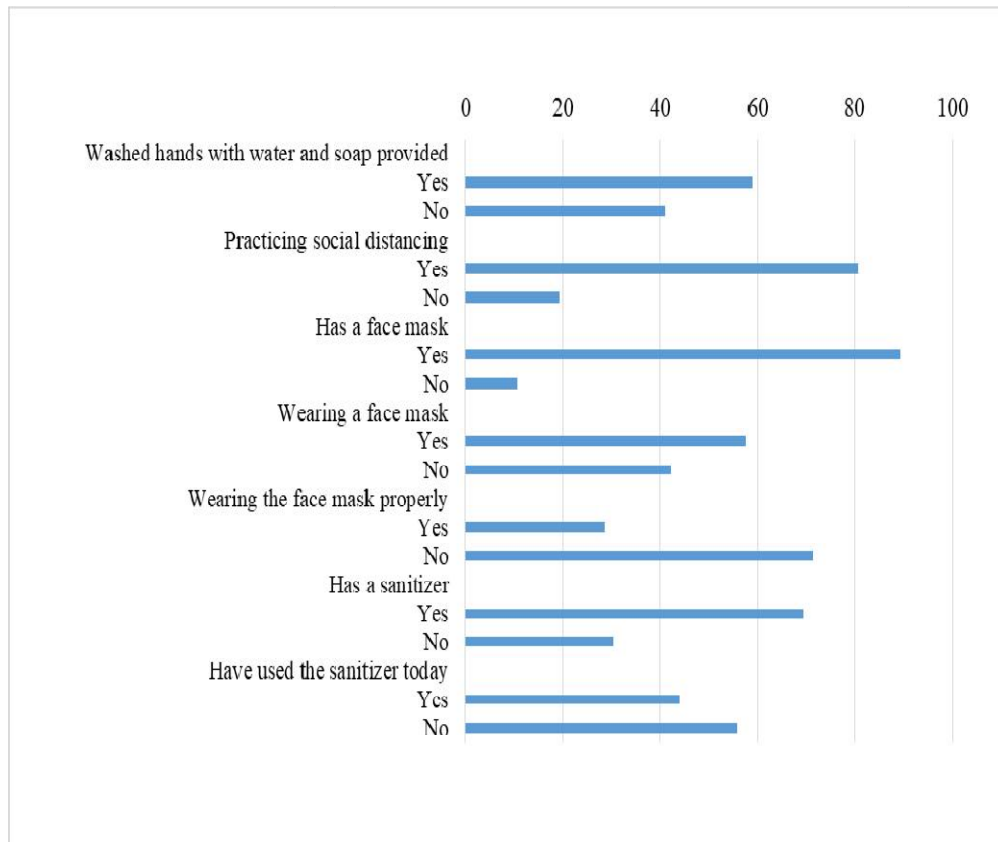


Fig. 1. Practices of respondents

Table 3. Frequency distribution of caregivers wearing their facemasks properly for the various levels of education and most common caregivers' occupation

Educational level of caregiver	Wearing facemask properly			P-value
	Yes (n=46) (%)	No (n=115) (%)	Total (n=161) (%)	
None formal	1 (2.2)	2 (1.7)	3 (1.9)	.13
Primary	1 (2.2)	5 (4.4)	6 (3.7)	
Secondary	8 (17.4)	48 (41.7)	56 (34.8)	
Tertiary	36 (78.2)	60 (52.2)	96 (59.6)	
Occupation of caregivers				
Trader	19 (41.3)	52 (45.2)	71 (44.1)	.85
Civil servant	7 (15.2)	16 (14)	23 (14.3)	
Teacher	9 (19.5)	10 (8.7)	19 (11.8)	
House wife	4 (8.7)	15 (13)	19 (11.8)	
Unemployed	3 (6.5)	5 (4.4)	8 (5)	

Table 4. Frequency distribution of participants who washed their hands with water and soap and ownership of a sanitizer

Washed hands with water and soap (n=161)	Ownership of sanitizer (n=161)			p-value
	Yes (%)	No (%)	Total (%)	
Yes (%)	75 (67)	20 (40.8)	95 (59)	.001*
No (%)	37 (33)	29 (59.2)	66 (41)	
Total (%)	112 (69.6%)	49 (30.4%)	161 (100)	

* Statistically significant

4. DISCUSSION

In this survey, all participants were aware of COVID-19. Similar findings were recorded in a community-based survey across Rivers State (98.2%), where participants of this study come from, in Enugu metropolis where 100% had heard and 80% had good knowledge about it, and in North-Central Nigeria (99.5%) [8,18,19]. This is impressive and an evidence that the awareness and sensitization campaigns from state and non-state agencies about the novel disease are reaching the people. In Sierra Leone also, when there was yet no confirmed case, 91% of participants indicated they had heard of COVID-19, which may have been prompted by their previous experience with the devastating West African Ebola epidemic [20]. On the contrary, awareness of COVID-19 was low in a study in Ethiopia (49.4%), and unacceptably low among Community Health Workers (CHWs) in a rural setting in Cross Rivers State, as 9.3% of respondents had total knowledge score of at least 50% [21,22]. This was attributed to the novel nature of the virus, and possibly the relative neglect in building capacity of CHWs, who constitute an essential group of grassroots-oriented healthcare professionals [22].

Television and radio, which are effective channels for disseminating health information as they can reach larger percentage of people within a country, were the major sources of information in this study. This agrees with previous reports across the country [8,11,18]. Traditional means of information dissemination however, were not popular, possibly as a result of the high proportion of well-educated people among the respondents, while the lockdown and social distancing measures imposed by the Government might also have played a role [19].

A combination of the preventive measures has been noted to help in limiting the transmission of the virus from one person to another.

In this study, 59% of participants reported washing their hands with water and soap. This figure is lower than 92.7% reported in an online survey with a higher sample size in Saudi Arabia, 81.6% in Enugu and 90.5% recorded in the wide spread community survey in Rivers State, where surprisingly, only 39% of participants demonstrated all handwashing steps satisfactorily [2,18]. The steps of hand washing were however, not explored in this series. On the other hand, hand hygiene practice was reported

to be poor (56.4%) in the Cross Rivers state study, which is worrisome as failure to effectively practice preventive measures among CHWs may expose them to the risk of getting infected and spreading the virus in their community [22]. Though the practice of preventive measures was also reported to be generally poor (58.6%) in the Enugu series, and was attributed to incomplete risk communication or other factors such as cost of procuring the materials/its availability, or even personal preferences, their figures were higher than the ones in the present study [8].

Social distancing may ultimately prove to be the most effective means of reducing the spread of COVID-19 amongst communities [6]. Its level was quite high in the report from Saudi Arabia series (92.3%) when compared to 80% in the present study, whereas 87% was reported in Sierra Leone with people avoiding crowded places to evade the infection [20]. Our smaller sample size may have been responsible for this difference, while the response by Sierra Leonians may probably be as a result of the many lessons learnt from curbing the devastating West African Ebola outbreak [20].

In this study, a large proportion of parents/caregivers (89%) had a facemask, which is understandable as the government of Nigeria and Rivers State made it compulsory to wear in public. However, 57.7% of participants wore their masks when entering into the department. This is lower than previous reports where use of face mask was stated to be high, as found in the north-central region of Nigeria (82.3%), in Cameroon (100%) and in Saudi Arabia (82.7%) [2,19,23]. The variance could be attributed to the study design, as the above stated series were online surveys with larger number of participants, and where people without access to the internet or perhaps the underprivileged, were excluded [2,19,23]. Furthermore, the proper wearing of the mask was not ascertained in those online series. Yet, the figure in the present series is higher than what was recorded amongst heads of households in Enugu metropolis (33.8%) and among CHWs in Cross Rivers State (50%) which was attributed among others, to inadequate provision of the necessary materials [8,22]. Nevertheless, it is worrisome that only 28.5% of participants wore their masks properly, covering both the nose and mouth. It is possible that the discomfort associated with wearing a mask, or not understanding that the measures are for their best interests, or even non-accepting this modality of prevention, accounted for the

difference. This behaviour however, is also reflected in the fact that 18% of participants did not have a sanitizer and did not wash their hands, and it is of great concern. Thus, government and concerned partners should not only enforce orders, but push a step forward by appealing to the people's goodwill, understanding and cooperation. This could be done through social awareness and effective risk communication to correct existing myths/misconceptions and overcome resistance, as people are generally likely to be resistant to what they do not understand, whereas lack of sufficient information has proven costly in past epidemics [6].

This study showed a gap between knowledge and practice of preventive measures, which has been previously reported [8,18]. In the Enugu study, despite good knowledge about COVID-19 (80%), only 41.6% of participants had good practice of preventive measures, whereas use of face mask was poorly practiced (33.8%) [8]. Also in the Rivers State series, 53.3% of participants had good knowledge score on COVID-19, which however did not sufficiently translate to good prevention practices among the people as only few (39%) were familiar with the steps of handwashing, despite report of practicing regular hand washing by the large majority (90.5%) [18]. These are possibly due to personal preferences or level of risk perception, among others. In contrast in Sierra Leone there was a strong association between knowledge and practices in the context of COVID-19 probably as a result of behavioural change attained during Ebola outbreak [20].

5. CONCLUSION

This study showed that the clientele of our hospital, who represent various strata of the populace have heard about Covid-19, mainly through the television and radio. However, there was a gap between knowledge and practice of preventive measures, especially regarding the proper wearing of face masks and hand hygiene.

Health education and innovative local strategies are recommended, to help improve the people's acceptance of, and compliance to preventive practices through implementation of behaviour change programs.

CONSENT AND ETHICAL APPROVAL

Approval for the study was obtained from the Ethics Committee of the hospital and consent to participate in the study was obtained from the parents/caregivers.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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