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# Impact of Covid-19 Pandemic on the Utilization and Delivery of Healthcare Services among Outpatients during the Early Phase of the Pandemic in Nigeria

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**Abstract.** During the early phase of the COVID-19 pandemic, some infection control measures were implemented to keep people safe and control the spread of the virus. These measures however were observed to cause significant delay or interruption in the delivery and utilization of healthcare services. The purpose of this study was to determine the impact of the COVID-19 pandemic on the utilization and delivery of healthcare services by outpatients in Nigeria during the early phase of the pandemic. A retrospective cross-sectional study design was utilized. We sampled 373 outpatients who had received healthcare services before and during the pandemic in the University College Hospital, Ibadan using convenience sampling. Descriptive and inferential statistics (t-test) were carried out and the level of significance was set as  $P < 0.05$ . Healthcare utilization was significantly impacted by the pandemic as there was a reduction in hospital visits by patients during the pandemic ( $P < 0.0003$ ). Restriction of movement and fear of contracting the virus was identified as reasons for the reduction in healthcare services utilization in about 59% of the participants. Patients rated the quality healthcare services delivered to them as 'average' during the pandemic as opposed to 'good' before the pandemic. The findings of this study showed that the COVID-19 pandemic had a significant impact on patients' utilization of healthcare services as well

as the delivery of adequate healthcare services in the hospital during the early phases of the pandemic. Therefore, we recommend that efforts be made to improve hospitals and nationwide preparedness for future pandemics to prevent healthcare interference and delay.

## Background

SARS-CoV-2 (COVID-19) infection, a predominantly highly contagious respiratory illness was first reported in Wuhan (China) in December 2019 (1,2). It was later declared a pandemic in March 2020 by the World Health Organization (WHO). Nigeria reported her first confirmed case on the 27th of February, 2020 in an Italian man who returned to Lagos from Italy (3).

During the early phase of the Pandemic in 2020 different governments and healthcare institutions took various actions to mitigate the worldwide spread of the COVID-19 virus. Global infection control measures which include various lockdown models, isolation protocols, restriction of movement amongst others by countries were all put in place during the early phase of the pandemic. Many hospitals additionally adopted protocols like reducing the number of medical staff, especially those that have been shown to be more vulnerable to COVID-19 complications: pregnant staff and those with underlying health conditions (4), quarantine of staff with a positive result, and encouraging healthcare staff at risk to work from home. Also, most health institutions cancelled elective procedures while maximizing resources available to adequately respond to the COVID-19 emergencies that may potentially ravage the healthcare system (5).

These concerted efforts from government and health care institutions during the early phase of the pandemic had an immense effect of patronage and utilization of health care services (6) and resulted in the interruption or outright delay in receiving care especially among patients with non-COVID-19

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emergencies (7). The impact of these efforts on the health of those affected certainly related to; delayed access to medical services, co-infection with the virus, altered emotional and psychological state, altered immunity, and increasing stress levels all contributing to increased mortality and morbidity. A study published in May 2020 estimated over one million more child deaths due to the declining access to child and maternal health services perpetuated by the COVID-19 pandemic response during the early phase of the pandemic (8). Other studies also acknowledged the impact of government and institution's efforts to mitigating the spread of the virus on vulnerable people living with non-communicable diseases (NCDs) (7,9).

Undoubtedly, the Sars-Cov-2 pandemic had the health system under a strain during the early phase of the pandemic in 2020. This was especially aggravated as vaccines for the virus were only in trial phase and were thus not available. Many studies published in 2020 from Asian and European countries which were the epicenters of the virus at different points reported a marked decline in utilization of health services (6,7,10,11). Moynihan *et al* in a study conducted in 2020, revealed that there was a 37.2% reduction in the utilization of healthcare services globally (9). Thus, the findings on impact of the pandemic on healthcare service utilization from different authors during the early phase of the pandemic supported the projections and predictions that the aftermath effects that may occur from the backlog of rescheduled medical appointments may be as detrimental as the Sars-COV-2 pandemic itself which could give a rise to a public health emergency post-pandemic (12). These realities were more ominous for low-income countries such as Nigeria with a poorly structured, understaffed, and under-performing health system even before the pandemic (13,14).

This study was conducted to evaluate the impact of the pandemic on healthcare utilization by outpatients and service delivery at the apex hospital in Nigeria during the early phase of the pandemic. The study location receives a rich influx of patients from all over the country and is also not left out in the hit of the pandemic. Outpatient clinics constitute an important component of care delivery serving as gatekeepers in the early diagnosis, treatment, management, and follow-up of medical and surgical ailments. Tracking changes in patronage and in-flow of patients in outpatient clinics serve as a useful gauge to assess how well patients utilize healthcare services.

**Methods**

*Study design and participants.* A retrospective cross-sectional study design was utilized in sampling 373 outpatients who had received healthcare services before and during the pandemic in the study location. The respondents were interviewed using convenience sampling between August 2020 and September 2020. The sample size was determined using the Cochran formula. Only participants who were aged ≥18 years and had received healthcare services before the pandemic were eligible to participate.

The study was carried out among outpatients of the University College Hospital (UCH), Ibadan. It is the apex hospital in Nigeria and receives high patronage of patients from all six (6) regions of the country and thus sees patients from diverse socio-demographic and socioeconomic backgrounds.

Table I. Socio-demographic characteristics of respondents who heard of COVID-19 (n=373).

Socio-demographic characteristics	Frequency (%)
Sex	
Male	145 (38.9)
Female	228 (61.1)
Marital status	
Single	95 (25.5)
Married	252 (67.6)
Separated	6 (1.6)
Widowed	20 (5.4)
Age (years)	
Under 18	26 (7.0)
18-29	57 (15.3)
30-41	97 (26.0)
42-53	81 (21.7)
Above 54	112 (30.0)

The hospital has specialists in various fields of medicine and is a frontier for the advancement of medical education and research in the country.

*Measurement tools and methods*

*Survey questionnaire.* Data was collected using a self-administered structured questionnaire created based on findings from reviewed literature. The questionnaire consisted of three (3) sections. In section one, socio-demographic details such as sex, marital status and age of respondents were asked. Section two assessed the following: patients' utilization of healthcare services before and during the pandemic, factors that affected healthcare utilization by patients during the pandemic and patients' assessment of healthcare services before and during the pandemic. Patients were also asked to assess COVID-19 preventive services in the hospital. The last section assessed the respondents' willingness to interact with the healthcare system during and after the COVID-19 pandemic. This section also assessed factors responsible for the rescheduling of appointments of some respondents.

*Statistical analysis.* Each questionnaire was visually inspected for completeness. Data collected were retrieved and coded into IBM SPSS version 20. Descriptive statistics were used to report qualitative data. The quality of health services respondents received before and during the pandemic was rated using a Likert scale of 1-5 where 1 represents 'Excellent' and 5 represents 'Very Poor'. Changes in the utilization of healthcare services before and during the pandemic were tested for significance using a t-test. The level of statistical significance was considered as  $P < 0.05$  at 95% confidence limit.

**Results**

Of the 373 analyzed responses, 145 (38.9%) respondents were males while 228 (61.1%) were females. Other information on the socio-demographic variables is shown in Table I.

Table II. Interactions with the hospital before and during the Pandemic (n=373).

	1-3	4-6	7-10	>10	Mean	P-value
How many times did you visit the hospital in a month?						
Before COVID-19 pandemic	302	33	12	26	3.24	0.0003
During COVID-19 pandemic	329	31	5	8	2.57	
How soon (days) do you go to the hospital after developing symptoms of sickness?						
Before COVID-19 pandemic	295	33	16	29	3.40	0.0691
During COVID-19 pandemic	277	40	9	47	3.86	

Table III. Factors affecting hospital attendance during the pandemic (n=221).

What prevented you from going to the hospital in time during this COVID-19 pandemic?	Frequency (%)
Fear that you will test positive for COVID-19	68 (30.8)
Fear that you might get COVID-19 from the hospital	131 (59.3)
Fear that your symptoms may be COVID-related	50 (22.6)
Movement restrictions due to curfews or lockdowns	159 (71.9)
Advice from the hospital to stay away from the hospital except in emergency	3 (1.4)
COVID-19 protocol put in place were too stringent	2 (0.9)
Doctors' strike action and closed clinics	5 (2.3)
Was outside Ibadan	2 (0.9)

The difference in the average number of hospital visits to access healthcare services by respondents before and during the pandemic is statistically significant (P-value=0.0003) as shown in Table II. However as shown on Table II, the interval between symptom onset and hospital presentation before and during the pandemic was not statistically significant assessed. The mean ( $\pm$ SD) number of days between symptoms onset and hospital (P=0.0691) During the early phase of the pandemic, the major factors reported by respondents preventing them from going to the hospital (Table III) were restrictions to movement and fear of contracting the virus from the hospital (n=159 and 131 respectively).

Using a Likert scale to assess the quality of healthcare service delivery before and during the pandemic (1 represents 'Excellent' and 5 represents 'Very Poor'), the median score for adequate healthcare service delivery before and during the pandemic were rated as 2 (Good) and 3 (Average) respectively.

Many of the respondents (66.8%) scored the hospital good or excellent in keeping them safe as well as the hospital staff in ensuring adherence to the preventive protocols (75.9%). Availability of hand sanitizers, water and soaps for cleaning was rated as either excellent or good by the majority (70.8%) of the respondents (Table IV).

Table V give details of patients' willingness to interact with the healthcare system during and after the pandemic. Though many (68.9%) of the respondents believed they could benefit from a virtual consultation during the pandemic, more than half (56.3%, n=210) however declined preference of a virtual

consult over physical consultation. Over 81% said they will be more eager to go to the hospital once a vaccine is available.

As reported by Table VI, during the early phase of the pandemic, more than 42% (Fig. 1) of the respondents had had their hospital appointments rescheduled by the doctor 15.7% was caused by COVID-19 movement restriction. The majority (81.8%, n=130) who had their appointments cancelled eventually had the meeting rescheduled (Fig. 2).

## Discussions

This study informs the hospital and community on the impact of the COVID-19 pandemic on healthcare delivery and utilization during the early phase of the COVID-19 thus contributing to policies that will help improve the quality of healthcare services delivered to patients during and after a pandemic.

The study showed a statistically significant decrease in healthcare service utilization and delivery during the pandemic when compared to before the pandemic. There is a significant difference in hospital visits in a typical month during the COVID-19 pandemic when compared to a typical month before the pandemic. More than half of the respondents had different factors that prevented them from going to the hospital during the pandemic such as fear that they will become infected, movement restrictions etc. Respondents generally rated health care workers high in ensuring the prevention of COVID-19 during the pandemic. However, there was no significant delay in hospital presentation after the onset

Table IV. Patients' assessment of COVID-19 preventive services (n=373).

Rating	Ability of hospital to keep you safe from COVID-19	Health workers ability in effecting the COVID-19 preventive rules?	Availability of hand sanitizers, water and soaps for cleaning in the hospitals
Excellent	72 (19.3)	78 (20.9)	86 (23.1)
Good	177 (47.5)	205 (55.0)	178 (47.7)
Average	112 (30.0)	84 (22.5)	80 (21.4)
Poor	9 (2.4)	5 (1.3)	19 (5.1)
Very poor	3 (0.8)	1 (0.3)	10 (2.7)

Table V. Patients' willingness to interact with the healthcare system during and after COVID-19 pandemic (n=373).

Items	Yes n (%)	No n (%)
Given the choice, would you rather prefer to go to another hospital with less reported COVID-19 cases?	234 (62.7)	139 (37.3)
Would you prefer that healthcare staff provide home services instead of you going to the hospital?	165 (44.2)	208 (55.8)
Would you be more eager to go to the hospital if there was a vaccine for COVID-19?	303 (81.2)	70 (18.8)
Do you think you would benefit from virtual consultations during the COVID-19 pandemic?	257 (68.9)	116 (31.1)
Do you think virtual consultation should be a regular option going forward from COVID-19, to limit hospital visits?	249 (66.8)	124 (33.2)
Would you prefer a virtual to a physical meeting with health personnel?	163 (43.7)	210 (56.3)
Do you think you received a lot of COVID-19 related health information?	316 (84.7)	57 (15.3)
Would you prefer to receive health information more peculiar to you?	327 (87.7)	46 (12.3)

Table VI. Reasons for scheduled appointments not holding n=159.

Items	Frequency (%)
Couldn't meet up with the appointment for personal reasons	26 (16.4)
It was rescheduled by the doctor	80 (50.3)
COVID-19-related reasons and movement restrictions	25 (15.7)
Strike action/Doctor's unavailability/Hospital closure	11 (6.9)
Limit on the number of patients that can be seen by a doctor	5 (3.1)
Others	12 (7.5)

of symptoms during the COVID-19 pandemic when compared to before the pandemic.

The emergence of the SARS-CoV-2 virus and the resulting containment protocols had a significant impact on hospital visitation in the study. This is similar to observations from previous studies in Hong Kong (7,10), Malaysia (15), and a systematic review utilizing works from Europe and the Americas (9). A similar finding was observed in a study in Nigeria that assessed the health-seeking behavior of women for their children (16).

Also, delay in receiving care within the first three days of symptoms increased by 4.8% (Table II) during the pandemic, while the number of patients who delayed presenting to the clinic after 10 days of symptoms increased from 7.8 to 12.6% (Table II) agreeing with a large retrospective study in China (17) and another study in Nigeria (18). Though this finding was

not statistically significant, it however shows the presence of increasing interruption in care among these groups of patients who had begun receiving care. This interruption may in turn regress earlier improvements in health status, worsen health outcomes and overall, increase the number of hospitalizations and overall health cost and burden on the health system.

Of those who affirm that they had a reason for not going to the hospital early to seek for healthcare service, 30.8 and 59.3% relate the delay to the fear of testing positive to the virus and contracting the virus in the hospital respectively, revealing gaps to be bridged in increasing patient's confidence in hospitals in keeping them safe.

Compared to a combined 79.3% of the respondents who rated the quality of care rendered to them as either 'excellent' or 'good' before the pandemic, only 31.7% still held this opinion during the pandemic while 54.7% regarded care as average. 120

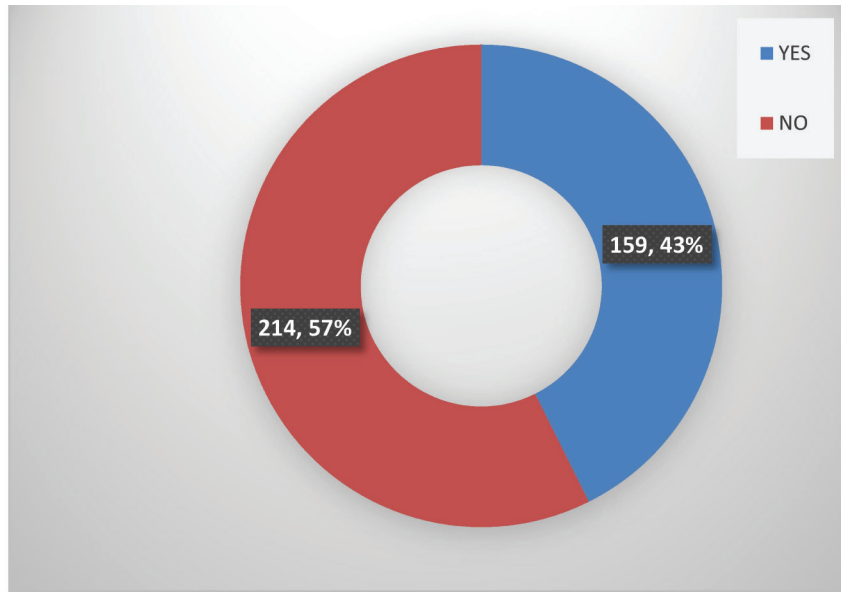


Figure 1. Did you ever have a scheduled appointment cancelled during the pandemic?

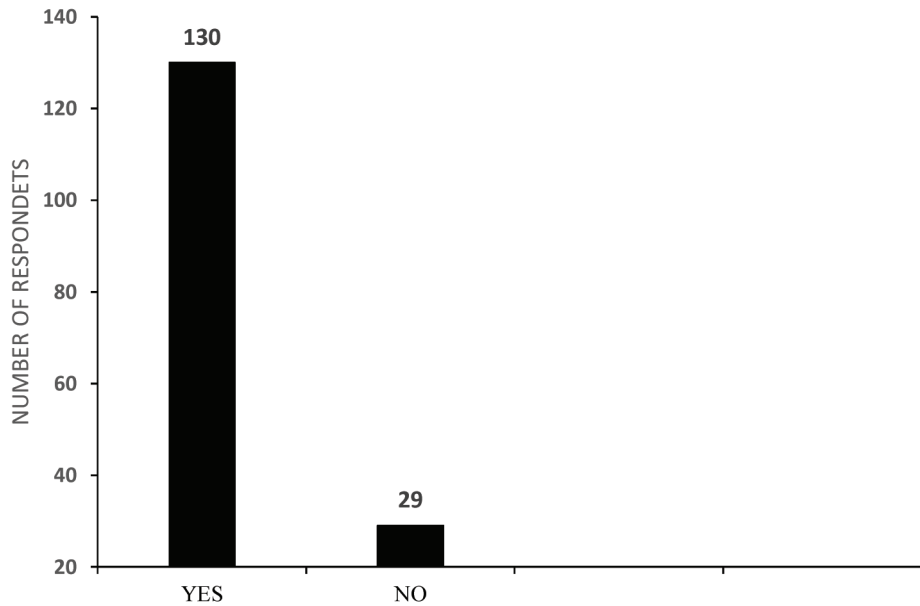


Figure 2. Was the cancelled appointment rescheduled?

This negative rating is not surprising because the containment measures caused additional stress and delays for patients to access care. Additionally, strained resources and manpower is suspected to also have a major influence on this. This finding thus supports the call for renewed significant investment in healthcare especially in recruitment, compensation, and training of staff. Over two-thirds of our patients scored the availability of hand sanitizers, water, and soaps for cleaning in the hospital as either 'good' or 'excellent' while the same proportion agreed that healthcare workers were implementing containment protocols.

One hundred and fifty-nine (42%) respondents reported that they had a scheduled appointment cancelled during the pandemic and this was majorly because it was cancelled by the doctor (50.3%). Lower rates were reported in studies

from Germany (19). These cancelled appointments may be related to the healthcare provider's fear of spreading the infection, uncertainty in the management of the novel disease and fear of contracting the virus from a patient. All these, therefore, culminate in reduced capacity for timely recognition of new incident diseases (19). In addition, 15% of those who had their appointment rescheduled replied that restriction of movement during the pandemic was responsible for the delay in receiving care. Therefore, efforts must be put in place in future pandemics (now postulated as being inevitable) to incorporate considerations for patients receiving ongoing care especially as our study revealed that many of the patients still resisted domiciliary and virtual care delivery, a finding also reported by Babalola *et al* (16).

Although it was impressive that 81.8% (n=130) of the cancelled appointments were rescheduled, the percentage of these patients that returned for the visits were, however, not measured. Therefore, efforts must be made to strengthen the present referral and follow up of patients as well as reducing the number of cancelled appointments to ensure that care is given when it is timely and most effective.

## Conclusion

The study observed a reduced rate of patronage of the medical and surgical outpatient clinics of the University college hospital, Ibadan, during the lockdown necessitated by the COVID-19 pandemic among patients who had previously used these clinics. In addition, there was a reduction in hospital visits by patients during the pandemic. As observed by patients, there was a decline in the quality of care delivered during the lockdown, and many had their appointments cancelled by doctors during the lockdown. Therefore, efforts should be made to remodel healthcare service delivery in the hospital and the country to avoid interruption of care. Finally, this experience calls for an innovative approach to telemedicine as many patients remain opposed to this model of care.

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## Ethics statement

The clinic heads were approached for entry permission and ethical approval was obtained from the Ethics Review Board of the College of Medicine, University of Ibadan, with ethical approval Number UI/EC/20/0408. Verbal and written permission was obtained from all patients, responses were anonymized and were untraceable to the patients. All patients were assured that no harm would come to them either by participating or not.

## Authors' contributions

This study was carried out with collaboration among all authors. Daniel Ehis Aigbonoga, Shehu Adiat, Taye David Owoputi, Adebimpe Rukayat Jubril, Azeezat Morolake Salawudeen participated in the literature review, draft writing and study design. Joshua Temidayo Obarombi, Williams Yobuh Shekinah, Azeezat Morolake Salawudeen, Abiodun Opeyemi Lawal participated in data collection. Authors Adebimpe Rukayat Jubril and Taye David Owoputi participated in result/data analysis. All authors participated in proof reading the manuscript for intellectual contributions. All authors funded, read and approved the final manuscript.

## Conference presentation

This research was presented at the 2021 AMSUL Annual Scientific Conference 2021 where it won First Runner Up Best Presentation.

## Conflict of interest

The authors do not have any conflicts of interest to declare.

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