VOLUME 39, NUMBER 4
April 2022

ISSN 0189 - 160X

WAJM

WEST AFRICAN JOURNAL OF MEDICINE

ORIGINALITY AND EXCELLENCE IN MEDICINE AND SURGERY

OFFICIAL PUBLICATION OF
THE WEST AFRICAN COLLEGE OF PHYSICIANS *AND*
WEST AFRICAN COLLEGE OF SURGEONS

www.wajmed.org

WEST AFRICAN JOURNAL OF MEDICINE

WEST AFRICAN JOURNAL OF MEDICINE

ORIGINAL ARTICLE

The Indirect Victims of COVID-19: Perception of Non-COVID-19 Patients about the Effect of Closure of the Medical Outpatient Services on their Health

Les Victimes Indirectes de la COVID-19 : Perception des Patients Non Atteints de la COVID-19 Au Sujet de L'effet de la Fermeture des Services Médicaux Ambulatoires Sur Leur Santé

[1]*J. A. Ogunmodede, [2]O. A. Bolarinwa, [3]A. J. Ogunmodede, [1]M. O. Bojuwoye, [4]A. H. Bello, [5]B. F. Dele-Ojo, [6]I. A. Yusuf, [4]T. S. Abiola, [1]A. B. Olokoba, [1]P. M. Kolo

ABSTRACT

BACKGROUND: In order to reduce COVID-19 transmission and protect healthcare workers, the outpatient departments (OPDs) in many hospitals worldwide were closed down in the early days of the pandemic. Patients being managed for chronic medical illnesses who subsequently suffered reduced access to healthcare have been described as "the patients left behind".

AIM: The study aimed at assessing the impact of the closure of the Medical OPD in University of Ilorin Teaching Hospital (UITH) on the health and perceived well-being of patients with chronic medical illnesses.

METHODS: A cross-sectional study of 180 patients with chronic medical illnesses attending the MOPD in UITH.

RESULTS: Mean age of participants was 50.2±18.2years, 92 (51.1%) were male, median duration of attending MOPD was 21 months (IQR 12-36). 92 patients (51.1%) perceived a negative affectation of their well-being by the closure of MOPD. Being >50 years was associated with a perception of negative affectation of well-being (P=0.042). 140 patients (77.8%) had clinic appointments that fell within the period under review. 67(69.3%) of the 97 patients who had medical complaints during the period could not reach a doctor and this was associated with a perception of negative affectation of their wellbeing. The commonest action they took was to do nothing (28.3%), three (4.5%) resorted to herbal concoctions. 19 (29.9%) felt their complaints were urgent.

CONCLUSION: Our study identifies that patients with chronic medical illness are potential victims of COVID-19 related disruption of healthcare services. Healthcare managers in Nigeria must develop alternatives such as telemedicine that sustain face-to-face medical interaction during eventualities. **WAJM 2022; 39(4): 355–361.**

Keywords: COVID-19 disease, Chronic medical illnesses, COVID-19 related closure of Medical outpatient services, perception.

RÉSUMÉ

CONTEXTE: Afin de réduire la transmission de la COVID-19 et protéger les travailleurs de la santé, les services ambulatoires (OPD) dans de nombreux hôpitaux dans le monde ont été fermés dans les premiers jours de l'Pandémie. Patients pris en charge pour des maladies chroniques quipar la suite souffert d'un accès réduit aux soins de santé ont été décrit comme "les patients laissés pour compte".

OBJECTIF: L'étude visait à évaluer l'impact de la fermeture de l'OPD médical à l'hôpital universitaire d'Ilorin (UITH) la santé et le bien-être perçu des patients atteints de chroniquesMaladies.

MÉTHODES: Une étude transversale de 180 patients atteints de chroniques maladies médicales fréquentant le MOPD à l'UITH.

RÉSULTATS: L'âge moyen des participants était de 50.2 ±18.2 ans, 92 ans(51.1 %) étaient des hommes, la durée médiane de la participation au MOPD était de 21mois (IQR 12-36). 92 patients (51.1 %) ont perçu un résultat negative l'affectation de leur bien-être par la fermeture du MOPD. Être >50ans était associée à une perception d'affectation négative de bien-être (P= 0.042). 140 patients (77.8 %) avaient des rendez-vous à la clinique qui s'inscrivait dans la période considérée. 67 (69.3 %) des 97 patients qui ont eu des problèmes médicaux au cours de la période n'ont pas pu atteindre un et cela était associé à une perception d'affectation negative de leur bien-être. L'action la plus courante qu'ils ont prise était de ne rien faire (28.3%), deux (4.5%) ont eu recours à des concoctions à base de plantes. 19 (29.9 %) ont ressenti leurs plaintes étaient urgentes.

CONCLUSION: Notre étude identifie que les patients atteints de maladie chronique les maladies médicales sont des victimes potentielles des perturbations liées à la COVID-19des services de santé. Les gestionnaires de soins de santé au Nigeria doivent se developper des solutions de rechange comme la télémédecine qui soutiennent la médecine en personne interaction lors d'éventualités. **WAJM 2022; 39(4): 355–361.**

Mots-clés: Maladie COVID-19, Maladies chroniques, COVID-19 fermeture connexe des services médicaux ambulatoires, perception.

[1]Department of Medicine, University of Ilorin, Ilorin, Kwara State, Nigeria. [2]Department of Epidemiology and Community Health, University of Ilorin, Ilorin, Kwara State, Nigeria. [3]Department of Behavioural Sciences, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria. [4]Department of Medicine, University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria. [5]Department of Medicine, Ekiti State University Ado-Ekiti, Ekiti State, Nigeria. [6]Department of Medicine, Dalhatu Araf Specialist Hospital, Lafia, Nassarawa State, Nigeria.

***Correspondence:** **Dr. Ogunmodede James Ayodele,** Department of Medicine, University of Ilorin, Ilorin, Kwara State, Nigeria. Phone: +2348052081183 Email: ayodeleogunmodede@yahoo.com

Abbreviations: OPDs, Outpatient Departments; **UITH,** University of Ilorin Teaching Hospital.

INTRODUCTION

The current COVID-19 pandemic has constituted an unprecedented public health challenge to most nations worldwide. The disease, which is caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, Hubei Province, China in December 2019.[1] It has since spread rapidly and cases have escalated in 218 countries and territories of the world putting a huge strain on health systems and resources available for health management in affected places.[2]

As the COVID-19 pandemic spread, its implication on healthcare institutions quickly gave reason for concern. Hospitals and healthcare facilities being the first port of call for affected individuals were seen as areas of potential COVID-19 transmission to non-infected patients and healthcare workers. In some environments, it also became necessary to conserve resources within the health system in order to free up resources to combat COVID-19 whose course as a pandemic was still largely unpredictable in most countries at that time.

The various lockdown measures instituted by various governments in order to ensure physical distancing which included various degrees of movement restrictions also influenced the eventual actions of managers of healthcare. Principally to protect healthcare workers from being exposed to or contracting the COVID-19 infection and to limit its transmission among patients within the hospital premises, most hospitals and healthcare systems across the world reorganised their activities. Strategies implemented included closing out-patient departments, thereby suspending clinic appointments and out-patient procedures,[3] as well as postponement or outright cancellation of elective procedures and surgeries.[4] Emergency departments were however left open in most health facilities. The University of Ilorin Teaching Hospital (UITH), in conformity with these trends and in order to reduce the risk of healthcare workers contracting COVID-19 closed down the Specialist clinics of the Medical Outpatient Department (MOPD) on March 23, 2020 and re-opened them on June 8, 2020 when the curve of the pandemic in the state had flattened out. Worldwide, the focus on COVID-19 and the closure of outpatient services left patients being managed for chronic medical illnesses at risk of worsening of symptoms, unattended drug side effects, poor drug adherence and disease exacerbations, making them to constitute what has been described as "the patients left behind" by the healthcare system.[3] The response of hospitals to the pandemic by closing down certain services because of concern about in-hospital transmission of COVID-19 also increased public fear about COVID-19 exposure and made patients to further avoid the hospital.

Hence, patients who are on long term care for non-COVID-19 illnesses have emerged as the indirect victims of the COVID-19 pandemic. The aim of our study was to assess the impact of the 11-week closure of the MOPD in UITH on the health and perceived well-being of patients with chronic medical illnesses who usually attended the clinic but were unable to do so during the period.

SUBJECTS, MATERIALS AND METHODS

Study Design and Setting

The study was a cross-sectional study conducted at the UITH, Ilorin, Nigeria. UITH is the predominant tertiary health care facility in the city, receiving referrals from private and government-owned health facilities. Majority of the people resident in Ilorin are of Yoruba ethnicity. Other ethnic groups represented include Hausa, Igbo, Fulani, Nupe and Bariba.

Study Population

After the re-opening of the MOPD, patients were approached to fill a structured, self-administered questionnaire. Patients who were willing to participate in the study and who could not read English had the questionnaire administered to them by trained research assistants who translated them. The translated questionnaire was pre-tested among 20 patients in the General outpatient department. The study took place between July 6 and August 6, 2020. Consenting adult patients who were aged 18 years and above, who had started receiving treatment in the clinic before the COVID-19 induced closure and who were on treatment for a chronic medical illness were included in the study. Newly presenting patients and patients who were on follow-up in MOPD for acute sundry complaints such as musculo-skeletal chest pain or without a definite chronic medical illness aetiology were excluded from the study.

Sample Size Determination

The minimum sample size was calculated using the Yamane's formula[5]:

$$n = \frac{N}{1 + N(e)^2}$$

where n= minimum sample size, N= population size, *e*= precision level (which is set at 0.05). On the average, up to 15% of patients at the MOPD on any given day are usually new patients so 85% of the usual population of patients attending MOPD in one month was considered as N. Also, because of a deliberate policy limiting the number of patients seen in MOPD in the immediate period after it was re-opened, we assumed a 40% attendance rate for patients at MOPD during the period of the study giving an estimated population size (N) of 327. The calculated minimum sample size using the Yamane's formula was thus 180 patients.

Patient Enrollment and Data Collection

Participants were selected by convenience sampling. Patients attending the MOPD were approached randomly to participate in the study until the minimum sample size was reached.

Data was collected using a structured, questionnaire which included demographic information, information related to the patient's experiences during the shutdown and patients' perception of how the shutdown affected his/her health, medication compliance and access to medical attention when needed.

Ethical approval was obtained from the Ethical Review Committee of the UITH. The study was carried out in accordance with international ethical principles as laid out in the Declaration of Helsinki.[6]

Statistical Analysis

The study data were analyzed using SPSS version 23 (SPSS Inc., Chicago, Illinois). Normally distributed continuous variables were expressed as mean + SD, while skewed data were expressed as median and interquartile range (IQR). Categorical variables were expressed as percentages. The Chi-square test was used to compare proportions of categorical variables and the Student t- test for comparing means of continuous variables. Two-sided p values <0.05 were considered significant.

RESULTS

One hundred and eighty patients participated in the study. Table 1 shows that over half of the participants (92, 51.1%) perceived that the closure of MOPD negatively affected their wellbeing.

Overall, the participants comprised 92 females (51.1%). The perception of being negatively affected by the closure of MOPD was similar in both genders. The mean age of participants was 50.2±18.2 years and the mean age was similar in those who perceived their wellbeing was negatively affected by the closure of MOPD and those who did not (p=0.175). The number of patients aged over 50 years were slightly more than younger patients 98 (54.4%) and were more significantly affected negatively by the closure of MOPD than younger patients (p=0.042). Majority of the patients were educated (89.9%) and the educational status was not associated with a perception of negative affectation by the closure of MOPD (P=0.689).

The median monthly income of all patients was N50,000 (USD131.00) and majority of participants who declared their income earned less than this (30, 53.8%). Income level was not significantly associated with a perception of negative effect of the closure of MOPD. Majority of the respondents were married, and had a source of income as employed or retired personnel. These factors were not associated with perception of negative effect of the closure of MOPD. (p=0.427, p=0.512).

The median duration of attendance of MOPD was 21 months (IQR: 12–36) and this was not significantly associated with a perception of negative effect of the closure of MOPD on patients' wellbeing. One hundred and forty (140) patients (77.8%) had clinic appointments

Table 1: Socio-demographic Variables of Study Participants

Variables	All Patients N=180 n (%)	Wellbeing Negatively affected by the Closure of MOPD n= 92	Wellbeing not affected by the Closure of MOPD n= 88	P-value
Did the Closure of MOPD Negatively affect your overall Wellbeing?				
Yes	92 (51.1)			
No	88 (48.9)			
Age (years)	50.2±18.2	50.07±17.1	53.61±16.8	0.175
Age ≤50 years	82 (45.6)	28 (34.1)	54 (65.9)	0.042*
Age >50 years	98 (54.4)	47 (48)	51 (52)	
Gender				
Female	92 (51.1)	40 (43.5)	52 (56.5)	0.362
Male	88 (48.9)	35 (39.8)	53 (60.2)	
Highest Level of Education				
None	19 (10.1)	10 (64.3)	9 (35.7)	0.848
Primary	25 (13.2)	11 (55.0)	14 (45.0)	
Secondary	43 (23.8)	19 (46.2)	24 (53.8)	
Tertiary	93 (52.1)	47 (50.8)	46 (49.2)	
Median Monthly Income	50,000 [32,000–100,000]	50,000 [30,000–100,000]	50,000 [31,000–100,000]	0.908
Marital Status				
Single	30 (16.7)	14 (48.1)	16 (51.9)	0.352
Married	124 (68.9)	66 (53.3)	58 (46.7)	
Widowed	22 (12.2)	8 (35.3)	14 (64.7)	
Divorced	4 (2.2)	1 (25)	3 (75)	
Employment Status				
Employed	106 (58.9)	55 (52.0)	51 (48.0)	0.493
Unemployed	37 (20.5)	15 (40.5)	22 (59.5)	
Retired	37 (20.5)	18 (50.0)	19 (50.0)	
How long have you been attending MOPD (months)	21 [12–36]	24 [12–36]	18 [12–48]	0.538
Did your clinic appointment fall into the period of the MOPD shut down				
Yes	140 (77.8)	72 (51.5)	68 (48.5)	0.930
No	40 (22.2)	23 (59.3)	17 (40.7)	

Values are Mean + Standard deviations, frequency (percentage) or Median [Interquartile range]

that fell within the period of the closure. Table 2 shows the profile of illnesses the patients were being managed for in the MOPD. The commonest illnesses among our respondents were systemic hypertension (56 patients), diabetes mellitus (23 patients), heart failure (19 patients), and chronic kidney disease (20 patients).

An assessment of the effect of the closure of MOPD on the patients shown in Table 3 revealed that 97 of them (53.9%) had a complaint they wished to discuss with their doctor. This was significantly associated with perception of negative affectation of their wellbeing ($p<0.001$). Majority of these 97 patients (67, 69.3%) could not reach their doctor at all through any alternative means to physical consultation. Of the 30 patients who could contact their doctor, majority did so via phone call (22, 73.3%), text message 4 (13.3%), WhatsApp 3 (10%) and one person (3.3%) reached the doctor through a mutual friend. For those patients who could not contact their doctor, 18 (26.9%) did nothing, two (3%) visited the hospital's emergency department, 16 (23.9%) visited a private hospital, 13 (19.4%) consulted a pharmacist in a pharmacy outlet, three (4.5%) consulted a nurse, six (9%) consulted other health workers who were neither doctors, pharmacists nor nurses, and three (4.5%) resorted to herbal concoctions.

Table 2: Profile of Medical Illnesses the Study Participants were being managed for at MOPD

Illness	Frequency n (%)
Systemic hypertension only	43 (23.9)
Heart failure	19 (10.5)
Stroke	15 (8.3)
Systemic hypertension & Diabetes mellitus	13 (7.2)
Chronic Kidney Disease	19 (10.6)
Diabetes mellitus only	10 (5.6)
Arthritis	8 (4.4)
Low Back pain	7 (3.8)
Hepatocellular Carcinoma	7 (3.8)
Chronic Hepatitis B virus Infection	5 (2.8)
Peptic ulcer disease	5 (2.8)
Cervical spondylosis	3 (1.7)
Bronchial Asthma	3 (1.7)
Thyrocardia	3 (1.7)
Sickle cell	2 (1.1)
Urolithiasis	2 (1.1)
Acute kidney injury	2 (1.1)
Epilepsy	2 (1.1)
Parkinson's disease	2 (1.1)
Primary headache syndrome	2 (1.1)
Hyperthyroidism	2 (1.1)
Nephrotic syndrome	2 (1.1)
Post Cardiac surgery	1 (0.55)
Coronary artery dx	1 (0.55)
Dementia	1 (0.55)
Peripheral neuropathy	1 (0.55)

Values are Frequency (Percentage)

Evaluation of the effect of the closure of the MOPD on patients' self-reported medication adherence revealed that 34 (15.1%) admitted not taking their drugs regularly during the period. Reasons adduced include inability to renew prescription in 17 patients (50%), absence of the usual reminders about drug adherence from doctors in the MOPD in three patients (8.8%), lack of funds in one patient (2.9%). 19 patients (10.6%) felt an urgent need to visit the MOPD for consultation during the period of closure but could not.

Table 4 shows the profile of complaints patients had during the period of closure for which they would have loved to see the doctor in MOPD. The commonest complaints were joint pains in 22 (23.7%), back pain in 12 (15.5%), chest pain in 10 (11.3%).

DISCUSSION

COVID-19 was declared a pandemic by the World Health Organisation (WHO) on 11th March, 2020.[7] It has united health systems worldwide in the battle for self-preservation and the search for strategies to strike a balance between protection of health workers from infection and remaining true to the Hippocratic oath by granting unhindered access for all patients to their healthcare providers irrespective of the nature of their illnesses. As at 30th November, 2020 there were 63,548,669 cases worldwide and 1,473,113 deaths.[8] Nigeria had recorded 67,557 cases and 1,173 deaths.[9]

On account of the pandemic, cutbacks in various aspects of healthcare services have been reported across all the sub-specialties of Medicine.[4] While emergency services remained largely undisrupted in most environments, outpatient services were scaled down and in most cases suspended. With this went the usual opportunities for patients to get both outpatient consultations and procedures.

In our study, the number of patients who felt that the closure of MOPD affected their wellbeing negatively was rather high. While the attention of health administrators and the medical world was focused on COVID-19, individuals with non-COVID-19 related illnesses suffered avoidable neglect. Also, patients aged above 50 years were more likely to have a perception of negative affectation by the closure of MOPD. This suggests that older patients with non-COVID-19 illnesses constitute a vulnerable group that could develop adverse consequences to COVID-19 control measures such as closure of outpatient services. This could be because apart from bearing a higher burden of chronic medical diseases, older people also have peculiar illness experiences such as having multiple co-morbidities, having an increased propensity to develop reactions to treatment, and finding it difficult to self-monitor themselves thereby making them require frequent contacts with their doctor. The COVID-19 induced closure of MOPD may have exposed the vulnerability of this group of patients.

Having a complaint which required medical attention was also associated with a feeling of negative affectation by the closure of MOPD. This is expected because the outpatient clinic is a healthcare delivery point which has its own peculiar impact on patients' sense of wellbeing. It is a place where patients encounter multi-disciplinary facets of healthcare delivery with their interaction with the doctor, the nurse educator, patient support groups as well as other patients. The outpatient clinic is also frequently the gateway of the patient to other services in the hospital that could contribute to the patients' care. Services such as the pharmacy, laboratory, radiological and physiotherapy services (which in itself can be therapeutic) are accessed on referral from the MOPD.

Table 3: Patients' Perception of the Effect of the Closure of MOPD on their Wellbeing

Variables	All Patients	Wellbeing Negatively affected by the Closure of MOPD n= 92	Wellbeing not affected by the Closure of MOPD n= 88	P-value
A. Did you have any complaint you wished to discuss with your Doctor during the closure?				
Yes	97 (53.9)	23 (23.7)	74 (76.3)	<0.001*
No	83 (44.4)	49 (59)	34 (41)	
If Yes, were you able to speak with your Doctor (n=97)				
Yes	30 (30.7)			
No	67 (69.3)			
If Yes, by what means (n=30)				
Phone call	22 (73.3)			
WhatsApp	3 (10)			
Text message	4 (13.3)			
Through a mutual friend	1 (3.3)			
If you were unable to speak with your doctor, what did you do? (n=67)				
I visited the Emergency Room	2 (2.9)			
I did nothing	18 (28.3)			
I visited a private hospital	15 (23.9)			
I shared my complaints with a pharmacist	13 (20.9)			
I shared my complaints with a nurse	3 (4.5)			
I shared my complaints with some other health worker	6 (10.4)			
I shared my complaints with a friend	3 (4.5)			
I continued with my usual medications	4 (7.5)			
I took a herbal concoction	3 (4.5)			
B. Did you use your medications regularly during the Closure of MOPD				
Yes	146 (80.9)	61 (42.1)	85 (57.9)	0.698
No	34 (15.1)	14 (41.7)	20 (58.3)	
If no, why? (n=34)				
I couldn't renew my prescription	17 (50)			
No usual reminders from the doctor	3 (8.8)			
Lack of funds	1 (2.9)			
No reason	13 (38.2)			
C. Did you have any urgent need to visit the MOPD during Lockdown				
Yes	19 (29.9)	3 (16.7)	16 (83.3)	0.019*
No	161 (70.1)	71 (44.5)	90 (55.5)	

*Values are Frequency (percentage), *P <0.05 is significant*

Therefore, inability to visit the MOPD translates to lack of access to these other services to patients. Patients who have illnesses that require frequent monitoring of physiological parameters such as diabetics and patients with hyper-thyroidism stand the risk of being most affected by this. Patients whose treatment strategies also depend on the direct contribution of other healthcare professionals within the hospital but who are domiciled outside the MOPD such as the nutritionist and physiotherapist are also vulnerable to unabating symptoms and disease exacerbations.

Majority of the patients who had complaints during the period of closure of MOPD were unable to speak to their doctors about their complaints. This is because the hospital had no alternative means of sustaining face-to-face consultations in the MOPD such as a functional Telemedicine service or patients' call-in complaints lines. The absence of functional Telemedicine services in the MOPD in our hospital is similar to what obtains in many public tertiary hospitals in the country. Unfortunately, the COVID-19 pandemic evolved too rapidly to allow for the establishment of functional Telemedicine in most outpatient departments (OPDs) in public hospitals in the country before medical outpatient services were closed. The acceptability of Telemedicine in the outpatient setting to patients in developing countries has been reported by Kiberu, *et al*[10] and in the private healthcare sector both in Nigeria and in other parts of Africa, it was deployed for patient consultation as soon as the pandemic spread.[11] As the cases of COVID-19 increase and in the event of another lockdown in Nigeria, (which is already the case in parts of Europe[12]) it is

Table 4: Lsist of Participants' Complaints while at Home during the Closure of the MOPD

Variables	Frequency n (%) N=97
Joint pains	22 (23.7)
Chest pain	10 (11.3)
Back pain	12 (15.5)
Worsening of Blood Pressure	5 (6.2)
Recurrence of previous symptoms	4 (5.2)
Recurrent Headache	3 (4.1)
Worsening of heart failure symptoms and blood sugar control	3 (4.1)
Fever and diarrhea	2 (3.1)
I reacted to my drugs, headache and fatigue	3 (3.1)
I needed a new prescription	2 (2.1)
Pain and generalized body pains	2 (2.1)
I had some abdominal pains	2 (2.1)
My blood pressure dropped	1 (1)
My blood sugar was high	1 (1)
New onset of leg swelling	1 (1)
Difficulty passing out urine	1 (1)
Reduced urine output	1 (1)
Fatigue and Insomnia	1 (1)
Generalized body weakness	1 (1)
Goitre	1 (1)
Insomnia	1 (1)
Loss of weight	1 (1)
Occurrence of new symptoms	1 (1)
I had a wound that wouldn't heal	1 (1)
I did not know whether to stop or continue with my medications	1 (1)
Seems the medications were not working	1 (1)
I was not able to see well with my right eye	1 (1)
An episode of seizures	1 (1)
Inability to lift my right hand and speak well	1 (1)
Worsening Bradykinesia	1 (1)
Tingling in the right arm	1 (1)
Complaint not stated	8 (8.2)

Values are Frequency (percentage)

important to acquire Telemedicine infrastructure and develop the culture of its utilization as a complementary means of patient-doctor face-to-face interaction.

Only a minority of patients who felt the need to see a doctor during the period of closure could see or speak with one. This reflects the low level of out-of-hospital access patients ordinarily have to their doctors and other healthcare practitioners in the hospital. Though for fear of breach of their privacy, doctors and other healthcare practitioners who are involved in rendering outpatient services may not want to disclose their private phone numbers to patients. Public hospitals could bridge this gap by creating dedicated patient-complaint phone lines through which outpatients can speak to and get initial medical advice from a medical personnel, even if not their doctor, in the event of inability to come to the hospital. Our study suggests that the mobile phone should be central to any planned alternative to face-to-face outpatient consultation in our centre. This is because majority of the few patients who were able to communicate at all with their doctors during the closure of MOPD did so either by phone calls, WhatsApp messaging or short message service (sms). Not surprisingly, only one patient could establish a link to his doctor through a mutual friend. The Doctor-to-patient ratio in Nigeria is very low at 4 to 10,000 [13] hence the chance of having a social relationship with a medical doctor may be rather low. It is troubling that majority of the patients who were unable to reach their doctors when they had complaints did nothing and endured their complaints till the MOPD opened or such complaints resolved. This gives cause for concern because unattended complaints about treatment is a possible cause of poor or non-compliance with drugs and other treatment modalities. About one third of those who were unable to reach their doctors also consulted healthcare workers who were not doctors. Considering that these other healthcare workers consulted did not have access to the patients' medical records for a full understanding of what they were being managed for, the chance of receiving comprehensive care for whatever complaint is very low. These other healthcare workers also do not have the necessary competence to manage these patients. It is also of concern that two patients actually resorted to the use of herbal remedies. This is undesirable because our country's alternative medicine sector is governed by a weak regulatory framework through which products not tested for their efficacy find their way into the market. Only two patients who could not reach their doctors went to the Medical emergency department to seek attention. This is ordinarily the procedure in our centre, but is probably not widely known to patients and will need to be publicised among the hospital's patient population. On the other hand, because of the widely publicised fact that hospitals could be centres for contracting COVID-19 infection by both patients and non-patients alike, most patients with complaints could have refrained from visiting the Medical emergency.

The closure of the MOPD did not appear to affect self-reported medication adherence. Self-reported non-adherence to medication was observed in only 15.1% of patients. This is lower than the usual prevalence of non-adherence reported in patients with hypertension and diabetes mellitus in our centre and a surrounding centre in earlier studies.[14, 15]

However, we did a global assessment of drug adherence in this study and did not use a validated measuring tool.

Even though the commonest complaints patients had while at home during the period of closure of the MOPD was musculoskeletal, about 10% of them had chest pain. It was not within the scope of this study to evaluate each of the complaints of chest pain to predict possibility of ischemic aetiology, but chest pain is a symptom which, could have a seemingly innocuous onset, but herald severe rapidly deteriorating illness and even a fatal outcome. A significant reason to be concerned about unattended chest pain in a predominantly hypertensive patient population is the possibility of its being symptomatic of underlying ischemic heart disease. Though thought to be rare among Nigerians, Kolo, *et al* have shown that its incidence is on the rise in the country.[16]

Our study shows the indirect effect of COVID-19 and measures taken to contain its spread on patients with chronic illnesses who do not have COVID-19. The indirect negative effect of the disease may eventually outweigh its direct consequences. Though limited by a small sample size, our study is the first of its kind from Nigeria which assesses the indirect effect of COVID-19 on the process of healthcare on non-COVID-19 affected patients. Our study is also limited by the inability to confirm that patients did not have asymptomatic COVID-19 while at home during the period being reviewed. The testing rate in Nigeria is low and many asymptomatic cases may have gone undetected.

We recommend that public tertiary health institutions develop functional Telemedicine services in order to sustain face-to-face interactions during situations such as pandemics, curfews and other such eventualities. We also recommend that public hospitals maintain functional telephone helplines for patients to call in to either speak with their doctors or other competent professional before they can arrange in-person hospital visits. This is particularly important because patients with non-COVID-19 illnesses number far more than the individuals infected by the virus and may become a large mass of indirect victims of the disease.

ACKNOWLEDGEMENTS

The authors acknowledge Dr. Oluwole Adeoye and Dr Olaitan Adefila for assistance with data collection.

Duality of Interest

None.

REFERENCES

1. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. *J Med Virol*. 2020; **92:** 401–402.
2. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, *et al.* Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *J Med Virol.* 2020; **395:** 1054–1062.
3. Bruno B, Rose S. Patients Left Behind: Ethical Challenges in Caring for Indirect Victims of the Covid-19 Pandemic. *Hastings Centre Report*. 2020. pp. 19–23.
4. Liebensteiner MC, Khosravi I, Hirschmann MT, Heuberer PR, of the AGA-Society TB. Massive cutback in orthopaedic healthcare services due to the COVID-19 pandemic. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2020: 1.
5. Yamane T. Statistics, An Introductory Analysis, 2nd Ed., 1967. New York: Harper and Row. p65.
6. World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*. 2013; **310:** 2191–2194.
7. Masaki N, Sato A, Horii S, Kimura T, Toya T, Yasuda R, *et al.* Usefulness of the d-ROMs test for prediction of cardiovascular events. *International Journal of Cardiology.* 2016, **222:** 226–232.
8. Worldometer COVID-19 Pandemic. [document on the Internet]. 2020 May 19 [cited 2020 Oct 22] Available from https://www.worldometers.info/coronavirus/
9. Worldometer COVID-19 Pandemic. [document on the Internet]. 2020 May 19 [cited 2020 Oct 22] Available from https://www.worldometers.info/coronavirus/country/nigeria/.
10. Kiberu VM, Scott RE, Mars M. Assessing core, e-learning, clinical and technology readiness to integrate telemedicine at public health facilities in Uganda: a health facility-based survey. *BMC Health Serv Res.* 2019; **19:** 266.
11. Adebayo PB, Jusabani A, Mukhtar M, Zehri AA. The changing trend of teleconsultations during COVID-19 era at a tertiary facility in Tanzania. *Pan Afr Med J.* 2020; **35:** 125.
12. British PM imposes new lockdown in England as national COVID-19 cases top 1 million. [document on the Internet]. CBC/Radio-Canada 2020 Oct 31 [cited 2020 Nov 1]. Available from: https://www.cbc.ca/news/world/boris-johnson-uk-coronavirus-1.5785053.
13. Does Nigeria have too many doctors to worry about a 'brain drain'? [document on the Internet]. British Broadcasting Corporation 2019 Apr 24 [cited 2020 Nov 1]. Available from: https://www.bbc.com/news/world-africa-45473036.
14. Bolarinwa OA, Bamgbola OA, Sanya EO, Kolo P, Ameen HA, Durowade KA, *et al.* Pattern and Explanatory Factors for Medication Adherence among Patients with Hypertension, Diabetes mellitus and their Comorbidity in a North Central State of Nigeria. *International Journal of Public Health and Clinical Sciences*. 2017; **4:** 126–141.
15. Akintunde AA, Akintunde TS. Anti-hypertensive medications adherence among Nigerian hypertensive subjects in a specialist clinic compared to a general outpatient clinic. *Annals of Medical and Health Sciences Research.* 2015; **5(3):** 173–178.
16. Vieira MS, Andrade FR, Brandao L, Nobrega VTD, Guissa VR, Provenza JR. Precordial Pain, Leukocytosis and Bicytopenia in a Teenager with Systemic Juvenile Idiopathic Arthritis under Immunosuppressive Therapy. *Revista Paulista de Pediatria.* 2019; **37:** 252–256.