

Impact of COVID-19 pandemic on Neurosurgical Training and Practice: The experience of a Regional Neurosurgical Centre in sub-Saharan Africa

Koko AM*, Ismail NJ, Lasseini A and Shehu BB

Department of Neurosurgery, Regional centre for Neurosurgery, Usmanu Danfodiyo University Teaching Hospital, Nigeria

*Corresponding author:

Aliyu Muhammad Koko,
Department of Neurosurgery, Regional centre
for Neurosurgery Usmanu Danfodiyo
University Teaching Hospital, Sokoto, Sokoto
State, Nigeria, E-mail: kokoaliyu1@gmail.com

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1. Abstract

We assessed and described in detail how and to what extent, COVID-19 pandemic has affected the neurosurgical training and practice in our regional neurosurgical centre in sub-Saharan Africa.

2. Introduction

Corona virus-19 is a viral disease caused by severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) that was first reported in Wuhan city, China, in December 2019. The disease was subsequently discovered in other countries and declared a global pandemic by the world Health Organisation on March 11, 2020. [1,2] As of today, 21st February, 2021, world has recorded over 100 million cases of COVID-19 (11,709,024) and mortality of 3%.

On February 14, 2020, first case of COVID-19 was reported in Africa, in Egypt and later seen in other African countries.1 Nigeria recorded its first confirmed case of COVID-19 on 27th of February, when an Italian national tested positive for the disease. At the time of writing this paper, Nigeria has tested 1,441,013 cases, confirmed 151,553, active cases were 21,668, discharged-128,054 and mortality of 1,831. The aforementioned data was obtained from Nigerian Centre for Disease Control (NCDC) website. A case fatality of 3% (95%CI: 2:23-3.4%) was reported in Nigeria.2 In Sokoto state, as of 21st February, 2021, a total of 768 cases of COVID-19 were confirmed, 5 cases on admission and 27 deaths recorded. Currently, COVID-19 tests are done only in patients who have demonstrated clinical features of corona virus disease-19 or are exposed to the affected individuals.

Various guidelines were instituted targeted at preventing individ-

uals from contracting the disease. Most people refused to abide by the preventive measures and as such, Nigerian government forced to close schools and social gathering. Inter-state borders were closed, though not strictly. In the state where regional neurosurgical centre is located, closed its borders with other states but could not institute lock-downs, markets, mosques and other forms of gathering were not restricted, though a night curfew of 22:00 to 6:00 was imposed. In our hospital, strict prevention measures were instituted. Outpatient clinics were closed, elective surgeries cancelled and postponed indefinitely, three wards in the neurosurgical centre collapsed to one, postgraduate neurosurgical physical presentation changed to video conferencing academic discussions and tele-medicine encouraged. Within our department two residents tested positive, recovered fully and no mortality recorded.

Covid-19 pandemic has distorted all aspects of health care, neurosurgery inclusive. Neurosurgeons have been forced to adjust training and practice as health facilities concentrate energy on tackling covid-19 pandemic. As in other part of the world, COVID-19 pandemic has further degraded the alarming unmet global surgical services in sub-Saharan Africa. [3,4] A region with the lowest neurosurgeons per million populations.1 The current status of neurosurgery education and services couple with corona virus pandemic prompted this study to assess and report how COVID-19 has affected the training and practice of neurosurgery in sub-Saharan Africa.

3. Objective

We designed this report to determine how corona virus pandemic has affected the training and practice of neurosurgery in our sub-region.

4. Materials and Method

Relevant data for this study was extracted from out-patient clinic, elective and emergency operation registers, departmental post-graduate coordinator and secretary and departmental WhatsApp group for the schedules of online video conferencing and discussions.

5. Results

5.1. Impact On Outpatient Clinic Workflow

Out-patient clinic visit's register was retrospectively analysed, an average of 40-50 patients with various neurosurgical conditions were seen on weekly basis, six months before COVID-19 pandemic was declared. The clinic was closed by the hospital authority for a period of four months (April to July). Fewer patients (15 to 20) visited the clinic after re-opening of out-patient clinic for the first two months and the number has currently returned to pre-COVID-19 period.

The distribution of neurosurgical conditions seen in outpatient clinic includes: paediatric neurosurgery, neuro-oncology, neurotrauma, central nervous system infections and degenerative spine diseases. The pattern of cases consulted did not change before or during COVID-19 pandemic. After re-opening of the clinic, infection prevention and control measures were imposed, wearing face mask made compulsory, consulting rooms were organised to ensure physical distancing between Doctors and the patients. Hand washing gadgets made available at the entrance gate of the neurosurgical centre. Tele health and video clinic were suggested but not done due reasons such as, poor network in rural areas (most of our patients reside) and lack of mobile phones.

5.2. Impact On Elective Surgery

Elective surgeries were cancelled during lock down period (April to July 2020). An average of 64 to 80 elective surgical operations cases could not be done during COVID19 lockdown, even after the lockdown was relaxed, fear remains in many Doctors and other health workers involve in managing neurosurgical patients. At the time of writing this article, the elective surgery list has returned to a near normal pattern.

5.3. Impact On Neurosurgical Emergencies

Though, there was cancellation of outpatient clinic visits and admission of elective cases, admission of emergency neurosurgical conditions continues as usual via trauma centre and accident and emergency departments of the hospital. Emergency neurosurgical operations were offered unabated during or after lockdown was eased. Comparison between year before and a year into COVID-19 reveals no significant difference in the frequency of emergency neurosurgical operations done in our centre (Figure 3).

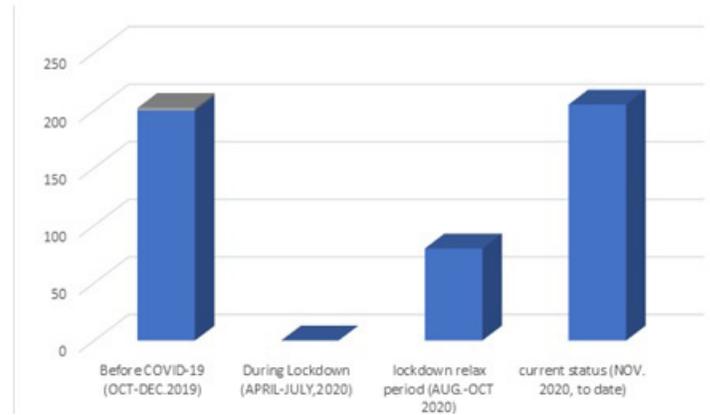


Figure 1: Average distribution of patient's clinic visits before and during COVID-19

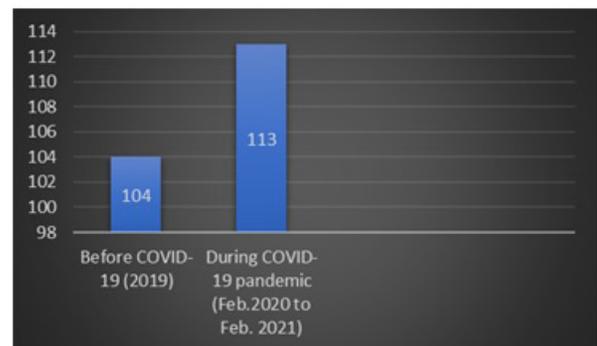


Figure 2: Average number of emergency neurosurgical procedures done before and during COVID-19 pandemic



Figure 3: Hand washing gadgets for patients at the entry gate of Neurosurgery centre.

5.4. Impact On Ward Rounds

in order to prevent patients and health workers from contracting corona virus 19 disease, three wards in the neurosurgical centre collapsed to one. Infection prevention and control measures were provided and enforced on all patients and health workers. Doctors duty rescheduled to minimise contacts and discussion of cases being done online via departmental WhatsApp group.

Table 1: Distribution of Emergency neurosurgical conditions operated during COVID-19 pandemic

Neurosurgical condition	Frequency	Percentage
Penetrating Head injury	28	24.77
Chronic subdural haematoma	18	15.92
Depressed skull fracture	15	13.27
Epidural haematoma	19	16.81
Acute subdural haematoma	4	3.53
Brain abscess	4	3.53
Shunt infection	2	1.76
Ruptured myelomeningocele	1	0.88
Ruptured occipital encephalocele	1	0.88
hydrocephalus	19	16.81
Spontaneous intraventricular haemorrhage	1	0.88
Pott's puffy tumor	1	0.88
Total	113	100

5.5. Impact On Neurosurgical Education

Postgraduate seminar presentation, journal club meeting and fellowship dissertation defense were made online via zoom video conferencing. Also, residents and consultants join international seminar presentation via zoom. Virtual attendance of highly educative international discussions of neurosurgical cases was made easy via zoom meeting in COVID-19 pandemic. The postgraduate trainees have benefited immensely from both local and international academic zoom meeting organized particularly by the WFNS. To buttress the fact that our trainee benefited a lot from international meetings, two of our trainees passed final fellowship examination of west African college of surgeons in October, 2020.

5.6. Impact On Research

There is obvious reduction in patients turn over and surgeries during COVID-19 pandemic. As such researches involving physical contacts with patients decreased significantly, our centre is currently participating in ongoing Global NeuroSurg 1 Study (GNS-1) on Traumatic brain injuries. Enrolment of our centre was possible, because we see a lot of patients coming with traumatic brain injury despite the pandemic, due to ease of lockdown, use of motorcycles in the sub-region, poor roads infrastructure and refusals to abide by traffic rules.

6. Discussion

This paper describes how COVID-19 pandemic has affected the activities of the regional centre for neurosurgery in our sub-region. The report gives detailed description of the changes that is occurring during COVID-19 pandemic, in terms of neurosurgery services and education. Outpatient clinic visits was cancelled for four months in order to curb the spread of corona virus disease as well as channelled resources to curtail the pandemic. The regional neurosurgery centre is the only fully accredited centre in North west and east part of Nigeria, with an estimated population of about 80 million population. In addition, the centre receives patients with neurosurgical conditions from neighbouring Niger and Benin republics. An estimated 1,600 patients with various

neurosurgical conditions have lost the opportunity of prompt and adequate neurosurgical care in sub-Saharan African countries, due to pandemic. Even when the outpatient clinic was reopened, there was overwhelming COVID-19 fear amongst patients and health-care workers, thereby yielding low turnout of patients in the centre. The extent of damage resulting from the aforementioned period is unquantifiable. Consequently, many elective neurosurgical operations were cancelled. Luckily, emergency neurosurgery went on unstopped as before the pandemic. Emergency neurosurgical operations were slightly higher than the year before COVID-19 pandemic. Most of our emergency admissions and surgery were traumatic brain injuries, this is due to use of motorcycles as the most common means of transport, bad roads, absence of effective local lockdown and refusal of majority of citizens to abide by the traffic rules. Also, some cases that are ideally elective might be converted to emergency because of cancellation of electives and closure of outpatient clinic.

Neurosurgical education has also been affected by COVID-19 pandemic, usual postgraduate seminar presentations and journal clubs were changed to online video conferencing. International online academic presentation attendance via zoom becomes easy and our trainees have been educated a lot by the highly informative presentations. Despite COVID-19 our centre was able to enrolled into Global Neuro Surg study 1 (GNS-1) on traumatic brain injury and assess the impact of the current pandemic on neurosurgical care and training as in the present study.

As in other part of the world, outpatient clinics and elective surgeries were cancelled and postponed [5,6]. But unlike in some tertiary neurosurgical centres in developed countries, telemedicine was practiced to reach neurosurgical patients who could not be seen because of the COVID-19 pandemic [6]. In our setting, most patients reside in rural areas with very poor mobile networks, in addition to overwhelming engagements of Doctors in ensuring corona virus disease does not bring down the unstable health system in the region.

7. Conclusion

The index study has demonstrated how and to what extent COVID-19 pandemic impacted on neurosurgical education and services. Details of each of the sections of neurosurgery care affected by the pandemic has been highlighted. Elective surgeries, outpatient clinics and training were negatively affected as against neurosurgical emergencies that increased during the pandemic.

References

1. Mahmud MR, Beverly C, Ignatius N.E, Kazadi K, Samuila S, Aaron M, et al. The Impact of COVID-19 on Neurosurgical Services in Africa. *World Neurosurg.* 2021; 146: e747-e754.
2. Ahmad A S, Suleiman A, Usman AA, Sulieman AS. Estimation of the case fatality rate of COVID-19 epidemiological data in Nigeria using statistical regression analysis. *Biosaf Health.* 2020; 3: 4-7.

3. Walter CJ, Natasha TI, Kenneth DS, Daniel RF, Hasan RS. The impact of COVID-19 on neurosurgeons and the strategy for triaging non-emergent operations: a global neurosurgery study. *Acta Neurochir (Wien)*. 2020; 162: 1229-1240.
4. Park KB, Johnson WD, Demsey RJ. Global neurosurgery: the unmet need. *World Neurosurg*. 2016; 88: 32-35
5. Lesheng W, Keyao Z, Jincan Chen. Letter: The impact of COVID-19 on the Neurosurgery Department During and after the Lockdown of Wuhan. *Neurosurgery open*. 2021; 2.
6. Adham MA, Adrian EJ, Ryan PL, Jon D W, Nicholas T, Alan RC, et al. Impact of COVID-19 on an Academic Neurosurgery Department: The Johns Hopkins Experience. *World Neurosurg*. 2020; 139: e877-e884