



Overview of the Effect of COVID-19 Pandemic on Residency Training in Surgery and Related Specialties in North-Central Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author BIO designed the study and online form, wrote the first draft, performed the statistical analysis and the final editing. Author BTU was involved in conceptualization of the study and performed the final editing of the manuscript. All authors were involved in study implementation and proof-reading and approval of the final manuscript.

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ABSTRACT

Background: The complete lockdown in Nigeria earlier this year as a result of the COVID-19 pandemic severely disrupted surgical care and training in all ramifications as mostly, only emergency cases were seen besides COVID-19 patients. After the lockdown, and gradual introduction of out-patient and elective surgical care and other medical services, measures to prevent transmission of the virus in our daily surgical practice as well as the introduction of virtual meetings and training are some of the new normal that will remain even after the pandemic.

Aim: The aim of this paper is to assess the impact of the COVID-19 pandemic on residency training in surgical specialties in Northcentral Nigeria.

Methodology: The objective was achieved using an online questionnaire distributed to residency training tertiary centres in Northcentral Nigeria.

Results: We found that various aspects of training were affected differently by the pandemic, with novel strategies adopted to minimize the impact.

Conclusion: We conclude that although there was a reduction in core activities of surgical training, there were strategies in place to mitigate the negative impact of the pandemic by streamlining care to protect the surgical community, whilst adopting new methods to sustain learning. There is need to incorporate these new methods into mainstream surgical training in the sub-region even after this pandemic.

Keywords: Surgical residency; COVID-19 pandemic; mitigating strategies; North-Central Nigeria.

1. INTRODUCTION

The Severe Acute Respiratory Syndrome coronavirus-2 (SARS Cov-2) also known as COVID-19 infection began in the city of Wuhan, China in December 2019 [1] and was declared a pandemic by the World Health Organization (WHO) in March 2020 [2]. Since then, it has progressively spread to almost every nation of the world with consequent disruption of life. There has been serious negative impacts on healthcare and training in virtually every aspect of medicine [3,4]. The first case of COVID-19 in Nigeria was reported on 27 February 2020 [5]. Since then, postgraduate medical education has had its fair share of disruptions, not least the postponement of the March/April/May 2020 examinations of the National Postgraduate Medical College of Nigeria (NPMCN) and the West African College of Surgeons (WACS), which were later merged with the September/October/November, 2020 diet. The Nigerian government imposed lock-downs and there was international, interstate and inter-local government border closures, ban on physical gatherings (including academic meetings), closure of emergency departments, isolation of surgeons and residents exposed to COVID-19, cancellation and sometimes discontinuation of elective surgical operation lists [2], postponement or cancellation of update, revision and skill acquisition courses and conferences [2] among others. These undoubtedly reduced the surgical workload markedly, as well as slowed traditional

training activities in institutions where training occur. While observing and learning the pattern of the COVID-19 disease, tertiary health institutions in turn responded variously to these challenges by modifying their activity and incorporating new ideas including digital alternatives to minimize the disruptive effect of the pandemic on residency training.

The practical nature of training in surgery and the ever increasing need to ensure patient safety makes it imperative for concerns to be generated about the quality of surgical training occasioned by any modification in established practice [6]. This current pandemic has undoubtedly altered the way we practice the art of surgery [7] with profound impact on surgical training and research. There is need to define how these changes relate to the daunting task of training competent surgeons who should be adequately prepared for an independent practice after residency training. The aim of this paper is to assess the impact of the COVID-19 pandemic on surgical residency training in the North-Central area of Nigeria. This understanding will guide interventions aimed at compensating for the disruption in traditional training activities, prepare us for the necessary adjustments in training that will be required to mitigate the effect of these present challenges as well as sustain improvements we have acquired from our response to the pandemic, even in the post-COVID era.

2. METHODOLOGY

This was an online questionnaire survey via goggle forms directed at trainers and trainees in Surgery and related specialities of Obstetrics and Gynaecology, Orthopaedics, Otorhinolaryngology, Ophthalmology, Anaesthesia and Dental surgery. The 22-item survey ran for three weeks, between 24th August and 13th September 2020. The questions were Likert-type, designed to elicit responses to determine the respondents' impressions on the changes they have experienced in various areas of surgical training including knowledge acquisition/transfer, clinical practice, operative surgery and skills transfer, surgical simulation, research activities and international best practices. The questions were further peer-reviewed before administration to improve their validity. Training institutions in North-central Nigeria involved in the study are Jos University Teaching Hospital (JUTH), Jos (Plateau State), Benue State University Teaching Hospital (BSUTH), Makurdi (Benue State), Federal Medical Centres in Makurdi (Benue State), Lokoja (Kogi State), Bida (Niger State) and Keffi (Nassarawa State), Dalhatu Araf Specialist Hospital (DASH), Lafia (Nassarawa State), University of Ilorin Teaching Hospital (UIH), Ilorin (Kwara State), University of Abuja Teaching Hospital (UATH), Gwagwalada and the National Hospital, Abuja. The responses were then collated and analysed using SPSS version 25.

3. RESULTS AND DISCUSSION

There were 219 respondents from 13 training centres (Fig. 1) which included 181 (82.6%) males and 38 (17.4%) females with a male to female ratio of 4:1. Majority (60.3%) of the respondents were between the 3rd and 4th decade of life and most (84.9%) of the respondents were trainees, while trainers (consultants) made up 15.1% of the respondents. The experience of respondents ranged from 1-33 years, with a mean of 4.8 years. Surgery accounted for 51.6% of the respondents, with other surgery-related specialities accounting for the remainder. The responses are as presented in Tables 1a and 1b. Compared to the pre-COVID-19 era, the predominant observations include: appreciation or sustenance of personal study, suspension or depreciation of group discussions and physical meetings, improvement in virtual meetings, reduced attendance at courses and workshop, and reduction or

discontinuation of medical students' teaching. Similarly, clinical interactions between trainers and their trainees deteriorated. A small fraction of respondents (9.7%) reported improvement in clinical interactions between trainers and trainees; and of these, two-thirds were from 2 institutions- FMC, Bida and DASH, Lafia. There was also deterioration in physical interaction with patients (history taking and physical examination), patients' turnout at clinics, elective surgery workload and research activities. However, frequency of call duty, emergency surgery workload, frequency of minimal access surgery and frequency of surgical simulation remained largely unchanged.

This study was conducted about 6 months after the index case of COVID-19 was reported in Nigeria. It shows that significant changes have occurred in residency surgical training in the North central Nigeria. There has been both setbacks and improvements resulting from the pandemic, and from innovative response to the pandemic. Surgical workload was generally reduced within the period under review, similar to findings by other authors [8,9]. The reasons for this were at least two-fold. Firstly, hospitals had to adopt measures aimed at reducing the spread of the virus. These included reduction of the workforce present at any point in time, social distancing, deployment of surgical residents to infectious disease units [10], and suspension of elective out-patient activities [11]. Secondly, patients that would have otherwise presented for non-urgent surgical care, elected to remain at home. The apparently reduced workload which resulted from these had negative implications in a field like surgery which is both clinical and pragmatic [9]. It is unclear why, and perhaps surprising that a few centres reported an improvement in clinical interactions between trainers and trainees within this period despite the lockdowns- which is in contrast to the general trend globally. Majority of respondents either sustained or improved on their personal study. This is explained by the stratified schedules within the period of lockdown, allowing only a fraction of the surgical staff at work at the same time. This arrangement provided more time for residents to study. Another hypothesis is that the usual surgical workload (prior to the pandemic) may be excessive, thus not allowing time for personal academic exercises, in concordance with the finding by Ojo et al. [12] that training of surgical residents in Nigeria is skewed towards service delivery to the detriment of other

academic activities. This raises concerns regarding postgraduate surgical training in the region. Routine surgical workload needs to be balanced with academic exercises. Suspension or depreciation of group discussions, physical meetings, update courses, and skills acquisition workshops was likely due to government directive in relation to COVID-19 prevention protocols. Similarly, teaching of medical students was suspended. A corresponding increase in virtual meeting reported by majority of respondents is an adaptation to compensate for this and sustain academic programmes. Wide adoption of virtual learning platforms in our region is one of the gains of postgraduate surgical education, with the use of ICT for surgical training as a result the COVID-19 pandemic. However, it is unknown how virtual meetings compare with physical meetings in the context of surgical training in our environment and further studies are required in this regard. Nonetheless, virtual training activities and even

presentation at surgical conferences have been promising and are expected to be sustained in both undergraduate and postgraduate surgical training even after the pandemic. One author¹³ reported a successful implementation of virtual surgical ward rounds, and suggested that a hybrid approach, comprising both physical and virtual components would be optimal when the pandemic ends. Virtual platforms including telemedicine have many advantages [13] and certainly need to be incorporated into residency courses and workshops beyond the COVID-19 era. As already stated, core clinical activities were expectedly reduced within the period. However, this does not necessarily translate to suspension of clinical training as emergency surgery workload was either increased or remained the same in most cases. Similarly, minimal access surgery, surgical simulation and research activities were sustained or increased in about half of the total respondents.

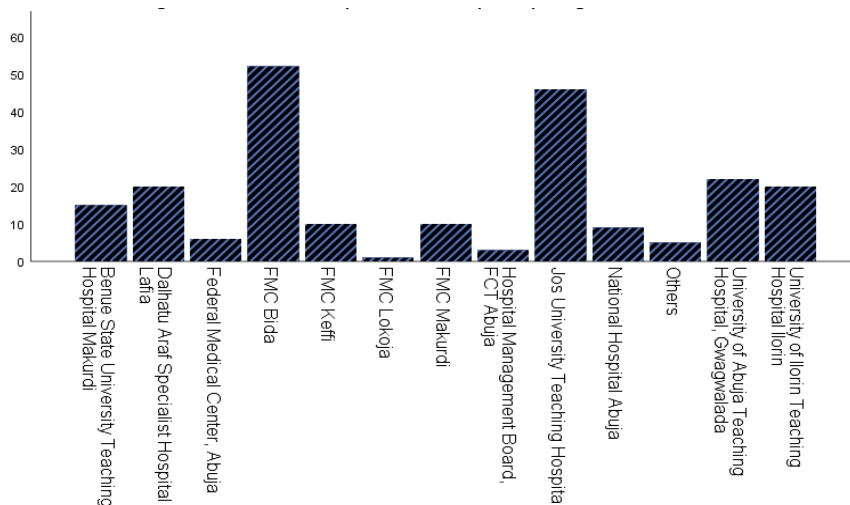


Fig. 1. Number of respondents from participating institutions

Table 1a. Responses from respondents

	Improved (%)	No change (%)	Worsened (%)	Suspended (%)	Total (%)
Personal study	83 (37.9)	50 (22.8)	84 (38.4)	2 (0.9)	219 (100)
Group discussions	43 (19.6)	35 (16.0)	87 (39.7)	54 (24.7)	219 (100)
Physical meetings	22 (10.0)	31 (14.2)	88 (40.2)	78 (35.6)	219 (100)
Virtual meetings	183 (83.6)	21 (9.6)	11 (5.0)	4 (1.8)	219 (100)
Trainer-trainee interactions	21 (9.6)	74 (33.8)	117 (53.4)	7 (3.2)	219 (100)
Clinical interaction with patients	13 (5.9)	79 (36.1)	125 (57.1)	2 (0.9)	219 (100)
Attendance at workshops	31 (14.1)	56 (25.6)	65 (29.7)	67 (30.6)	219 (100)
Medical students' teaching	9 (4.1)	47 (21.5)	55 (25.1)	108 (49.3)	219 (100)

Table 1b. Responses from respondents

	Increased (%)	No change (%)	Decreased (%)	Total (%)
Patients' turnout at clinics	17 (70.8)	47 (21.4)	155 (7.8)	219 (100)
Frequency of call duty	36 (16.4)	147 (67.1)	36 (16.4)	219 (100)
Workload at call duty	47 (21.4)	76 (34.7)	96 (43.8)	219 (100)
Elective surgery workload	9 (4.1)	28 (12.8)	183 (83.1)	219 (100)
Emergency surgery workload	50 (22.8)	102 (46.6)	67 (30.6)	219 (100)
Frequency of minimal access surgery	18 (8.2)	111 (50.7)	90 (41.1)	219 (100)
Frequency of surgical simulation	13 (5.9)	111 (50.7)	95 (43.4)	219 (100)
Frequency of research activities	45 (20.6)	64 (29.2)	110 (50.2)	219 (100)

There was an interplay of several factors affecting the quality of training during the COVID-19 period. This study has shown that core aspects of surgical training were adversely affected, however, based on our observations, we opine that it is premature to draw a general conclusion as to the adequacy of surgical training or otherwise during the period. We suggest that individual institutions retrospectively audit their training activities within the period to determine if these meet the minimum benchmark required by the surgical colleges. We also suggest that these institutions implement quality assurance measures to ensure that workplace safety requirements during the pandemic are met especially as it affects the desire to restore surgical workload and other traditional training activities.

The short period of the study and the small number of respondents are limitations that further studies would need to improve upon.

4. CONCLUSION

During the COVID-19 pandemic, although there was a reduction in core activities of surgical training, there were strategies in place to mitigate the negative impact of the pandemic by streamlining care to protect the surgical community, whilst adopting new methods to sustain learning. There is need to incorporate these new methods into mainstream surgical training in the sub-region even after this pandemic.

CONSENT AND ETHICAL APPROVAL

Approval for the study was obtained from the Health and Research Ethics Committee (HREC) of Benue State University Teaching Hospital, Makurdi. Respondents' participation was voluntary after informed consent, and their responses were anonymous.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *J Adv Res.* 2020;24:91–8.
2. Gallo G, Trompetto M. The effects of COVID-19 on academic activities and surgical education in Italy. *J Investig Surg.* 2020;33(7):687–9.
3. Edigin E, Eseaton PO, Shaka H, Ojemolon PE, Asemota IR, Akuna E. Impact of COVID-19 pandemic on medical postgraduate training in the United States. *Med Educ Online.* 2020;25(1):1774318.
4. Al-Benna S. Impact of COVID-19 on surgical registrars' education and training. *South African J Surg.* 2020;58(2):55–8.
5. Ohia C, Bakarey AS, Ahmad T. COVID-19 and Nigeria: Putting the realities in context. *Int J Infect Dis.* 2020;95:279–81.
6. Sanfey H. Assessment of surgical training. *Surgeon.* 2014;12(6):350–6.
7. Banerjee N, Bagaria D, Agarwal H. COVID 19 and surgery- how this pandemic is changing the way we operate. *Br J Surg.* 2020;107:390-390.
8. Aziz H, James T, Remulla D, Sher L, Genyk Y, Sullivan ME, et al. Effect of COVID-19 on surgical training across the United States: A national survey of general surgery residents. *J Surg Educ.*In press; 2020.

9. Bernardi L, Germani P, Del Zotto G, Scotton G, de Manzini N. Impact of COVID-19 pandemic on general surgery training program: An Italian experience. *Am J Surg*. In Press; 2020.
10. Collins C, Mahuron K, Bongiovanni T, Lancaster E, Sosa JA, Wick E. Stress and the Surgical Resident in the COVID-19 Pandemic. *J Surg Educ*. In Press; 2020.
11. Ogundele IO, Alakaloko FM, Nwokoro CC, Ameh EA. Early impact of COVID-19 pandemic on paediatric surgical practice in Nigeria: A National Survey of Paediatric Surgeons. *BMJ Paediatr Open*. 2020;4:000732.
12. Ojo E, Chirdan O, Ajape A, Agbo S, Oguntola A, Adejumo A, et al. Post-graduate surgical training in Nigeria: The trainees' perspective. *Niger Med J*. 2014; 55(4):342–7.
13. Sutzko DC, Martin CA, Chu DI. Development and implementation of virtual grand rounds in surgery. *Am J Surg*. In Press; 2020.

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