Postgraduate Dental Training in Nigeria: Challenges in the Era of COVID-19 Pandemic

Obuekwe ON
Department of Oral and Maxillofacial Surgery, University of Benin Teaching Hospital, Benin-City Edo State, Nigeria

Correspondence: Obuekwe ON
Email: oxobuekwe@yahoo.com

Abstract

Background: SARS-CoV2 is a very contagious infection believed to spread through respiratory droplets and contaminated surfaces, through the mucous membrane of mouth, eyes, and nose, and even via the fecal-oral route. Many dental procedures commonly generate aerosol mixed with blood and saliva droplets. This makes dentists generally not to only be at risk of getting infected but also capable of spreading the virus in the course of routine clinical duties. As a result of this, many dental facilities are forced to either modify the type of services they render or restrict treatment to only emergencies. This will no doubt have a 'difficult-to-quantify' impact on the postgraduate dental training program. Therefore, the aim of this study is to evaluate impact of coronavirus disease 2019 (COVID-19) pandemic on postgraduate dental training in Nigeria.

Methods: This was a cross-sectional research based on an objectively structured questionnaire that assessed the impact of the era of COVID-19 pandemic on Postgraduate dental training experience in the University of Benin Teaching Hospital, Benin-City, Edo State, Nigeria.

Result: COVID-19 pandemic has serious impact in many ways on postgraduate dental training in Nigeria. Most postgraduate trainees acknowledged that the pandemic affected them negatively (68.6%) and described their feeling towards the pandemic as anxiety.

Conclusion: It is necessary for the programme to be repositioned so as to meet up with future challenges.

Keywords: Postgraduate, Dental, Training COVID-19, Pandemic.

Introduction

In December 2019, the world got a report of the first corona virus disease-19 (COVID-19) among humans in Wuhan, China. On January 30, 2020, the World Health Organization (WHO) declared COVID-19 as the sixth public health emergency of international concern and on March 11, 2020 COVID-19 was declared a pandemic by the WHO[1,2]. The latest strain of corona virus under discussion is believed to have originated in a seafood market in Wuhan, China. The term COVID-19 was used to describe the associated disease on February 11, 2020. Since its emergence, COVID-19 has long spread round the world like a wildfire, ravaging the elderly and immunocompromised as well as the world economy and social order. SARS-CoV2 is a very contagious infection believed to spread through respiratory droplets and contaminated surfaces, through the mucous membrane of mouth, eyes, nose, and even via the fecal-oral route[3]. Many dental procedures commonly generate aerosol mixed with blood and saliva droplets. This makes the dentist generally not to only be at risk but also capable of spreading the virus faster in the course of routine clinical duties[4]. As a result of this, many facilities including institutions offering postgraduate training are forced to either modify the type of services they render or restrict treatment to only emergencies[5]. The impact on many organizations and institutions is enormous. Many residency training programmes across the world have been greatly affected and modified to respond to this peculiar situation[5,6,7,8]. This includes cancellation of many routine procedures, leading to reduction of clinical exposure or experiences, disruption of the

residents posting schedule and many others. Therefore, the aim of this study is to examine the impact of the era of COVID-19 pandemic on postgraduate dental training in the University of Benin Teaching Hospital, Benin-City, Edo State, Nigeria.

Materials and Methods

This was a cross sectional study aimed at assessing the challenges the era of COVID-19 pandemic has brought on postgraduate dental training from the experience of the trainees in the University of Benin Teaching Hospital, Benin-City, Edo State, Nigeria. An objectively structured questionnaire was used for data collection from 51 postgraduate dental trainees of the hospital. **(Appendix 1)**.

Inclusion criterion was being postgraduate dental trainees of the hospital while dental students were excluded from the study. Voluntary participation was ensured and verbal consent was obtained from each participant before giving the questionnaire. We also maintained participant's anonymity by ensuring that each identity was concealed and only one researcher was responsible for data collection. The questionnaire contained questions ranging from participants biodata, to assessing the depth of their knowledge about the virus and the pandemic, how the hospital and the department responded to the pandemic; in terms of provision of PPE and other safety wares and in area of policy making. Other areas assessed include how the new era has affected the postgraduate programme in terms of residents training, procedures being performed, clinical rotation and family lives. The findings were analysed and presented in simple frequency table and percentages.

Results

A total of 55 questionnaires were given out and 51 were returned and analysed giving a response rate of 92.3%. The respondents were aged 24-45 years with a mean age of 32.0 years. They were made up of 18 females representing 35.3% and 33 males representing 64.7% of the total. Forty-four (86.3%) of these were junior residents and 7 (13.7%) senior trainees **(Tables 1, 2 and 3)**.

Table 1: Age characteristics of participants

Age range	24-45 years
Mean age	32.0 years
Median age	30.0 years
Standard deviation	5.3 years

The youngest respondent was 24 years and the oldest 45 years. Mean age (standard deviation) was 32.0 (5.3) years. N= 51)

Table 2: Gender distribution of participants

Gender	Frequency	Percentage
Females	18	35.3
Males	33	64.7
Total	**51**	**100.0**

There were more males 33(64.7%) among the respondents.

Table 3: Professional status of participants

Status	Frequency	Percentage
Junior residents	44	86.3
Senior residents	7	13.7
Total	**51**	**100.0**

Majority of the respondents were junior residents. The constitute 86.3% of the respondents.

They were 37.3% of the trainees in the Department of Oral and Maxillofacial Surgery. The least specialties were periodontics and orthodontics representing 3.9% each **(Table 4)**. Most (72.5%) of the respondents considered themselves abreast with the unfolding pandemic, 7.4% thought they are not up-to-date and 17.6% were unsure of how to place themselves regarding the knowledge of the pandemic. Most (68.6%) knew the corona virus to be a positive-sense, single-stranded RNA genome; 96.1% knew the relationship between the SARS and corona virus but only 8(15.7%) are aware of a link between corona virus and MERS **(Table 5)**.

Table 4: Specialty of participants

Specialty	Frequency	Percentage
Community Dentistry	5	9.8
Oral and Maxillofacial Pathology Medicine/Pathology	8	15.7
Oral and Maxillofacial Surgery	19	37.3
Oral Diagnosis and Radiology	4	7.8
Orthodontics	2	3.9
Paedodontics	6	11.8
Periodontics	2	3.9
Missing	5	9.8
Total	**51**	**100.0**

Table 5: Up-to-date on COVID-19 pandemic

Questions/Phrases/Sentences	No n (%)	Yes n (%)	Unsure n (%)
Are you abreast with information on COVID-19?	4 (7.4)	37 (72.5)	9 (17.6)
COVID-19 was first reported in Wuhan, China in December, 2019	2 (3.9)	49 (96.1)	0(0.0)
Corona virus is enveloped with a positive-sense single RNA strand	2 (3.9)	35 (68.6)	14 (27.5)
Corona virus is a double-stranded DNA virus	21 (41.2)	9 (17.6)	21 (41.2)
SARS is caused by a strain of corona virus	0 (0.0)	49 (96.1)	2 (3.9)
MERS has a link with the corona viruses	20 (39.2)	8 (15.7)	23 (45.1)
Saliva is a tool of spread of COVID-19	8 (15.7)	40 (78.4)	3 (5.9)
Respiratory droplets is a tool of spread of COVID-19	0 (0.0)	50 (98.0)	1 (2.0)
Incubation period is 1-14 days	0 (0.0)	50 (98.0)	1 (2.0)
Is there a cure for COVID-19?	45 (88.2)	3 (5.9)	3 (5.9)

None of the respondents knew that epistasis has been described in COVID-19 patients, most described fever (88.2%), cough (84.3%), loss of smell (62.7%) and loss of taste (60.8%) **(Table 6)**. Most residents acknowledged that the pandemic affected them negatively (68.6%) **(Tables 7a and 7b)** and described their feeling toward the pandemic as anxiety (56.9%) **(Table 8)**. Some (8.0%) however were able to identify some positive side to this unusual era **(Table 7b)**.

Table 6: Knowledge of clinical features of COVID-19

Clinical features	No Frequency (%)	Yes Frequency (%)	Unsure Frequency (%)
Fever	0 (0.0)	45 (88.2)	6 (11.8)
Cough	0 (0.0)	43 (84.3)	8 (15.7)
Sneezing	0 (0.0)	10 (19.6)	41 (80.4)
Respiratory distress	0 (0.0)	24 (47.1)	27 (52.9)
Loss of smell	0 (0.0)	32 (62.7)	19 (37.3)
Loss of taste	0 (0.0)	31 (60.8)	20 (39.2)
Shortness of breath	0 (0.0)	13 (25.5)	38 (74.5)
Headaches	0 (0.0)	20 (39.2)	31 (60.8)
Fatigue	0 (0.0)	7 (13.7)	44 (86.3)
Diarhoea	0 (0.0)	11 (21.6)	40 (78.4)
Malaise	0 (0.0)	11 (21.6)	40 (78.4)
Epistaxis	0 (0.0)	0 (0.0)	51 (100.0)
Myalgia	0 (0.0)	3 (5.9)	48 (94.1)
Sore throat	0 (0.0)	14 (27.5)	37 (72.5)

Fever (88.2%), cough (84.3%) and loss of smell (62.7%) were the most known clinical features respectively. None of the respondents was sure of epistaxis as a clinical feature of COVID-19.

Table 7a: Description of personal effects of COVID-19 pandemic

Personal effects	Frequency	Percentages
Negative	35	68.6
Positive	8	15.7
Unsure	8	15.7
Total	**51**	**100.0**

Table 7b: Some specific affectations of COVID-19 pandemic

Description	Frequency (%)
Negative effects	
Reduced clinical exposure	37 (72.5)
Limited skill acquisition	35 (68.6)
Increased duration of training	27 (52.9)
Subjected to constant threat of infection	35 (68.6)
Put family members at risk	35 (68.6)
Affected exam date	22 (43.1)
Affected academic training	33 (64.7)
Positive effects	
Allowed more time for personal studies	8 (15.7)
Allowed more time for online studies, families and interactions with colleagues elsewhere	6 (11.8)
Allowed time for certification in other areas	6 (11.8)

Table 8: Description of feelings towards COVID-19 pandemic

Descriptions	Frequency	Percentages
Anxiety	29	56.9
Depression	6	11.8
Indifference	15	29.3
No response	1	2.0
Total	**51**	**100.0**

Departmental response ranged from reduction in the number of procedures 42(82.40%) to complete lockdown 36(70.6%) with reduction in number of doctors at work daily 41(80.4%) **(Table 9)**. Most residents (94.1%) reported non-availability of personal protective equipment **(Tables 10 and 11)** and lack of preparedness of the hospital administration/systems for COVID-19

Table 9: Description of Departmental responses towards COVID-19 pandemic

Descriptions	Frequency (%)
Usual practice	0 (0.0)
Complete lockdown	36 (70.6)
Screening and triage	29 (56.9)
Reduction in the number of procedures	42 (82.4)
Reduction in the number of patients seen	32 (63.8)
Reduction in the number of doctors at work daily	41 (80.4)
Immediate provision of complete PPEs	3 (5.9)

N = 51

Table 10: Availability of personal protective equipment following the outbreak of the COVID-19 pandemic

PPEs readily available	Frequency	Percentages
No	48	94.1
Yes	2	3.9
Unsure	1	2.0
Total	**51**	**100.0**

Table 11: Preparedness of the administration/ systems to outbreak of the COVID-19 pandemic and other major health challenges

Administrations and Systems ready and well prepared	Frequency	Percentages
No	48	94.1
Yes	0	0.0
Unsure	3	5.9
Total	**51**	**100.0**

Discussion

Knowledge of COVID-19 infection plays a major role in individual conduct and attitude towards curtailing further spread of the infection. A number of our residents demonstrated a great deal of this vital part. The response from the hospital management and the different units at the early stage of the pandemic suggested an understanding of the gravity of the task at hand with immediate switch from the routine practice to triage, immediate reduction in number of patients and procedures being carried out which were mostly emergencies, and recommendation of compulsory use of personal protective equipment (PPEs), though was not readily available. This adjustment is similar to responses from other residency training institutions in many parts of the world[9].

Dental postgraduate programme is a unique one with certain peculiarities that makes it a centre focus at this period of COVID-19 pandemic. This is supported by the fact that dentistry as a profession has been described as the one with the highest risk in this pandemic era[4]. It entails carrying out many hands-on procedures that are aerosol generating. Aerosol generation is one of the potent means of transmitting COVID-19 from patients to doctors and to other health workers. This spread will no doubt involve the family members of the health workers and indeed the general populace at large. As a result of these, most dental procedures were suspended. These included restorative procedures like tooth and crown preparations, scaling and polishing, denture repair and trimming, bone drilling procedures like third molar surgery, open reduction and internal fixation (ORIF) and many others. This is a great challenge to the dental postgraduate training programme as the procedures form the core components of what each resident is expected to perform and fill in their

respective log books as required by the Postgraduate Colleges as a prerequisite for examination. Also, suspension of these dental procedures prevents trainees from acquiring the necessary skills required in training.

Moreover, as a preventive measure against COVID-19 infection, most units developed a rotational arrangement that puts different teams of residents on duty at different times to allow for crowd control, to limit the possibility of exposure and for ease of contact tracing in case of exposure. This is a similar measure to that of surgical residency program in Dow University of Health Sciences[2]. and Cleveland clinic's urology residency programme[10]. Both institutions worked out a frame-work that limited the rate of clinical exposure to COVID-19 by reducing the number of hours each resident works per day. In addition, they added daily virtual learning as a way of enhancing the programme. Also, the rotational arrangement further reduces the amount of time and clinical experience of each resident. The implication of this is stagnation of many residents in a posting for a longer period and disruption in the training schedule and curriculum. Maintaining same duration of rotation for each posting as it was before the pandemic would mean defective training and exposure. Other effect of that is the extension of the residency programme duration, prevention of new entrants into the programme and postponement of postgraduate qualification examinations

Furthermore, this study revealed that most resident doctors considered themselves to be at risk and lived under constant fear of contracting the COVID-19 and transmitting same to their friends and family members. This is further compounded by lack of, or insufficiency of basic protective wears. A significant number of them attested to living in anxiety or depression which was similar to the findings of Katherine et al.[11], and Osama et al.[2], in two different studies of general surgery residents. This state of mind is unhealthy for the residents and it is capable of leading to poor decision making and procedural error during patient treatment[2].

Inspite of all the negatives about the impact of COVID-19 on dental postgraduate programme, there are some positive sides. Some of the residents believed the reduction in the numbers of days they had to be at work per month due to the crowd-control measure, allows them more time to do personal academic studies and research. Some were able to take some online courses and get certified in other areas. Some on the other hand believed it gave them time to participate and interact with other residents and professionals in various fields while taking virtual courses. This was a similar experience among surgical residents in Pakistan[2], among orthopaedic residents in Georgia[12], and many others residency training institutions[6,9,10]. Moreover, some of our residents noted that reduction in number of working days per month allowed them to spend more time with their families.

Conclusion

Postgraduate dental training in Nigeria has been greatly challenged by the COVID-19 pandemic in many ways including reduction of residents clinical exposure or experiences, restriction in number and frequency of dental procedures being carried out, disruption of the usual posting rotation, postponement of postgraduate qualification examinations, extension of the programme duration and many others.

Recommendations

This study is not without few limitations. This was a single-center-based study, more extensive study involving multiple centres is advocated. Incorporation of virtual training programmes into dental postgraduate training as part of measures to make up for reduced clinical experience and to brace up for future challenges is recommended.

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Appendix 1

Questionnaire

1. Age.....Years
2. Gender.....
3. Status: Senior Registrar..... Registrar..... Others.....
4. Specialty.....
5. COVID -19 was first reported in Wuhan China in 2019. No..... Yes..... Unsure.....
6. Coronaviruses are enveloped viruses with a positive sense single-stranded RNA genome. No..... Yes..... Unsure.....
7. Coronaviruses are enveloped viruses with double-stranded DNA virus. No..... Yes..... Unsure.....
8. Severe acute respiratory syndrome is caused by a strain of the coronaviruses. No..... Yes..... Unsure.....
9. East respiratory syndrome has no link with the corona viruses. No..... Yes..... Unsure.....
10. Saliva has been described as a main tool of spread of COVID-19. No..... Yes..... Unsure.....
11. Respiratory a main tool of spread of COVID-19. No..... Yes..... Unsure.....
12. Incubation period is 1-14 days. No..... Yes..... Unsure.....
13. Clinical features include (List as many as you can): .....
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14. Presently COVID-19 has no cure. No..... Yes..... Unsure.....
15. Do you think you are abreast with the COVID-19 pandemic? No..... Yes..... Unsure.....
16. How has the pandemic affected you? Negatively..... Positively..... Unsure.....
17. If negatively, how? (Tick as much as is applicable to you)
    a. Reduced your clinical exposure
    b. Limited your skill (surgical or other) acquisition
    c. Increased your duration of training by months
    d. Subject you to constant threat of contracting the virus
    e. Put you at risk or made you a threat to the health of your Friends and family members

f. Affected your exam date

g. Has affected your academic training courses

h. Others, (specify).....

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18. If positively, how? (Tick as much as is applicable to you)

a. Allowed you more time to do personal academic study

b. Allowed you to take some online courses

c. Allowed you to get certified in other areas

d. Allowed you exposure to participate and interact with other residents and your superior online

19. How will you describe your feeling to the declaration of a pandemic?

a. Anxious

b. Depressed

c. Indifference

20. What was the immediate response in your department to the pandemic? (Tick all applicable options)

a. Usual practice

b. Complete lockdown

c. Patient screening and triage

d. Reduction in number of procedures

e. Reduction in number of patients seen

f. Reduction in number of personnel at work

g. Compulsory use of PPEs

h. Others (Specify)

21. What SPECIFIC procedures where scaled down in your department, if any?.....

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22. Are PPEs readily available for your use? No..... Yes..... Unsure.....

23. If yes, list the available ones.....

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24. If no, list the NON-AVAILABLE ones.....

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25. Do you think that management of your Department responded appropriately to the pandemic? No..... Yes..... Unsure.....

26. If no. Propose a more appropriate response

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27. Do you think that management of the Hospital responded appropriately to the pandemic? No..... Yes..... Unsure.....

28. If no. Propose a more appropriate response

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29. Do you think that Government responded appropriately to the pandemic? No..... Yes..... Unsure.....

30. If no. Propose a more appropriate response

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