

Impact of the COVID-19 Pandemic on the Psychosocial Wellbeing of Dental Therapists in Nigeria

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Abstract

Background: The first case of coronavirus disease 2019 (COVID-19) was identified in Wuhan, China in December 2019, as a highly contagious infection transmitted via droplets, and person-to-person contact. Airborne and aerosol transmission have also been implicated. Aerosol generating procedures such as scaling and polishing may increase the risk for developing COVID-19 in dental clinics, and may thus place some psychological strain on dental therapists. This study aimed to determine the psychosocial effect of COVID-19 on dental therapists in Nigeria. **Materials and Methods:** This cross-sectional study was carried out following ethical approval from the institutional Ethics Committee. Data collection was through self-administered online questionnaires and included socio-demographic characteristics. Psychosocial well-being was assessed using a five-point Likert scale that assessed the level of worry. Scores were summed up to obtain the mean (range 5–25). Statistical significance was set at a level of $P \leq 0.05$. **Results:** The 192 respondents had a mean age of 28.0 ± 7.2 years, 96.9% were aware of COVID-19. Sixteen (8.3%) participants reported at least one medical condition. The mean psychosocial-wellbeing score was 18.4 ± 4.9 . Most (90.1%) were worried about the COVID-19 pandemic, while 76% were severely worried about getting infected with COVID-19 in the dental clinic, and 72.9% were severely worried about the availability of personal protective equipment (PPE) in the clinic. Participants with self-reported medical conditions had a slightly higher psychosocial score (18.6 vs. 18.4), but this was not significant ($P = 0.902$). **Conclusion:** The psychosocial effect of the COVID-19 pandemic was considerable on the dental therapists. The provision of PPE, training on Infection Prevention and Control, and psychosocial support will reduce the psychosocial effect of COVID-19 on dental therapists in Nigeria as they are willing to ensure patients' safety.

Keywords: Coronavirus disease 2019, dental therapists, Nigeria, psychosocial wellbeing

INTRODUCTION

The coronavirus disease 2019 (COVID-19) was initially discovered in a group of suspected cases of pneumonia of unknown etiology at Wuhan, Hubei, China, in December 2019.^[1] This infection is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and is an extremely contagious disease with >97,200,000 million people who have been infected with the virus and over 2,100,000 who have died globally as of January 24, 2021.^[2] Droplets and person-to-person transmission are the majors' modes of transmission.^[3] Airborne and aerosol transmission has also been implicated as additional routes of transmission.^[3] This may occur during long exposure to a large amount of aerosols containing the virus in a relatively

closed environment,^[4] which are characteristics of the clinical practice in dentistry.

The highly contagious nature of COVID-19 has thus been a great source of concern for dental healthcare workers including dental therapists who work in close contact with the oral cavity and perform a large number of aerosols generating procedures (AGPs)

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mainly in the form of scaling and polishing. Optimum infection control would therefore be a key preventive strategy against COVID-19. A recent study among dental therapists in Nigeria found their attitude and perception towards infection control to be very satisfactory, but their knowledge of COVID-19 was barely adequate.^[5] The exposure of dental therapists to infected patients may increase their risk of contracting COVID-19 thus placing enormous psychological strain on them. Since the index case of COVID-19 in Nigeria, the number of persons confirmed with the infection has risen daily and is currently 120,602 and 1495 deaths as of January 24, 2021.^[6]

The number of health-care workers in Nigeria who have become infected with the virus as of June 2020, was reported to be 812,^[6] representing about 7.5% of those affected as at the time of the report. The earlier government-imposed lockdown in Nigeria which affected several dental clinics providing only emergency cases have been lifted. With the gradual easing of the lockdown, elective procedures are being performed on dental patients more frequently, even though Nigeria is currently experiencing what appears to be a second wave of COVID-19.

This would necessitate a sufficient supply of personal protective equipment (PPE) for dental healthcare givers including dental therapists/hygienists. Furthermore, there is a need to ensure the other optimal infection control practices such as proper hand hygiene, routine disinfection of work surfaces, and limit AGPs.^[7]

Bearing this in mind, a lot of concerns have been raised as to what is required to sufficiently protect and enhance the capacity of dental therapists to perform their duties effectively. A recent study among health-care givers in Nigeria identified fear of infection and lack of indemnity as barriers to the effective performance of duties and there was a clamor for improvement in workplace safety during the COVID-19 pandemic.^[8] Health-care givers in Nigeria and indeed globally have clamored for more PPE. The restricted resources in developing countries like Nigeria may result in psychological problems such as stress, anxiety, depression.

While, majority of persons infected with COVID-19 present with symptoms that are often mild to moderate, the risk of transmission by asymptomatic carriers poses an additional challenge for dental therapists when performing procedures, particularly AGPs on patients whose COVID-19 status is unknown. This is in view of the limited testing capacity for COVID-19 in Nigeria. As of January 24, 2021, slightly over a million (1,141,147) samples had been tested for COVID-19 in Nigeria.^[6] This is small compared to the large population size of Nigerians, an estimated 200 million people. The non-availability of definitive treatment for COVID-19 could also potentiate anxiety levels. Although some vaccines have now been authorized and recommended in some countries in the world, none of these vaccines have been authorized in Nigeria.

In a survey carried out by Lai *et al.* amongst nurses and physicians in hospitals treating COVID-19 patients in China, they reported high levels of symptoms such as anxiety, insomnia, distress, and depression.^[9] Mental health issues and psychological effects have also been documented among dental health care workers during the current COVID-19 pandemic.^[10-12] A study among employees in a dental teaching hospital revealed that protective social isolation policies against the COVID-19 pandemic such as self-isolation and social distancing in the United Kingdom, seriously impacted the social and mental health of the dental staff due to their limited physical contact with their loved ones and the public during the initial lockdown period in April 2020.^[11] Equally highlighted by Fiorillo and Gorwood is the detrimental impact of the pandemic and the associated containment measures including social distancing, quarantine, and self-isolation on mental health.^[13] They further categorized health care workers as high-risk groups with rising levels of loneliness and reduced social interactions which could heighten several mental disorders, including significant depression and schizophrenia.^[13]

It is probable that COVID-19 would have a great effect on mental health in the African context due to the weak health care systems,^[14] as well as the limited access to social support structures following government-imposed restraints and limited face-to-face interactions in efforts to curb the further escalation of the virus.^[14] The psychosocial impact of COVID-19 among dental health care professionals in sub-Saharan Africa including Nigeria is unknown. Thus, the present study was aimed to determine the psychosocial effect of COVID-19 on Nigerian dental therapists.

In Nigeria, Dental Therapists are dental professionals, registered with the Dental Therapist Registration Board and practice mostly in dental clinics within military hospitals, secondary hospitals, tertiary hospitals, and their affiliated universities as well as private dental clinics. They perform clinical procedures which are largely non-surgical periodontal procedures such as professional oral prophylaxis.

MATERIALS AND METHODS

The Health Research Ethics Committee of the Lagos University Teaching Hospital, Idi-araba granted ethical approval for this study. This was a descriptive, cross-sectional national survey of Dental Therapists.

Data collection was achieved through self-administered semi-structured online questionnaires with closed and open-ended questions. The questionnaires were sent out to participants via an online data retrieval platform (Google forms) through the WhatsApp platforms using a link to the google form over a 6-week period (May 1 to June 11, 2020). This was to encourage more participation in the study. The link to the Google forms was sent to the dental therapists using their two WhatsApp platforms. The groups constitute both junior and senior dental therapists including the National

executives of the Therapist Board and the zonal representatives. Thus, there is a balanced representation of the therapists on both WhatsApp platforms from which the participants for the study were selected. The total sample size of the therapists on the two WhatsApp groups was 406 (254 + 152). The purpose of the study was briefly explained at the beginning of the Google form and participants' proceeding to fill the online survey was accepted as their willingness to participate in the study. Respondents were recruited via the purposive sampling method.

Data collection included socio-demographic features such as gender, age, ethnicity, self-reported medical conditions, and geopolitical zone where the participants were practicing. Their psychosocial wellbeing during the COVID-19 pandemic was assessed using a five-point Likert scale (1 = Not worried; 2 = Slightly worried; 3 = Moderately worried; 4 = Very worried; 5 = Severely worried). The scales were summed up to obtain the most impact on their psychosocial wellbeing, ranging from 5 to 25. A higher score indicated a more severe impact from the COVID-19 pandemic. The open-ended questions were used to assess COVID-19 related concerns and other suggestions from the participants. Similar responses were grouped and frequencies and percentages were derived.

Data entry and analysis were done using Epi Info 2000 version 7.2.3.1 Software Statistical Package. Descriptive statistics were used for the categorical variables which were expressed as frequencies and percentages. This included age (categorized into three groups), sex, marital status, ethnicity, geopolitical zone, and COVID-19-related questions. The mean score of the psychosocial well-being was computed and ANOVA was used to compare means between different categorical variables. A $P \leq 0.05$ was considered as being statistically significant.

RESULTS

One hundred and ninety-two therapists participated in the study and filled the online Google forms out of the 406 therapists on both WhatsApp group platforms who were expected to have accessed the questionnaires. Based on this, the response rate was determined to be 42%. The majority of the participants were females (75%). Participants' mean age was 28.1 ± 7.2 years, while the 25–34 years age group was the most frequent (48.4%). Most of the participants were from the major ethnic groups mainly Yoruba (68.7%), Igbo (18.8%), and Hausa (7.3%). Sixteen (8.3%) participants reported at least one medical condition/illness. Table 1 shows the sociodemographic characteristics of the participants.

Most (96.9%) of the participants were affirmative about the existence of COVID-19. The mean psychosocial well-being score was 18.4 ± 4.9 . Overall, 90.1% of the participants were worried about the COVID-19 pandemic, with 51.6% being very/severely worried. Only 9.9% were not worried about COVID-19 [Figure 1]. The participant's responses to the open ended questions about COVID-19 are presented in Figure 2.

Table 1: Sociodemographic characteristics of the participants

Variable	Frequency (%)
Age group (years)	
≤24	68 (35.4)
25-34	93 (48.4)
≥35	31 (16.2)
Mean age±SD	28.1±7.2
Gender	
Male	48 (25.0)
Female	144 (75.0)
Marital status	
Married	57 (29.7)
Single	135 (70.3)
Ethnicity	
Yoruba	132 (68.7)
Igbo	36 (18.8)
Hausa	14 (7.3)
Others	10 (5.2)
Self-reported medical condition	
Yes	16 (8.3)
No	176 (91.7)
Geopolitical zone of practice	
South West	127 (66.2)
South South	16 (8.3)
South East	13 (6.8)
North Central	13 (6.8)
North East	11 (5.7)
North West	5 (2.6)
Not disclosed	7 (3.6)

SD: Standard deviation

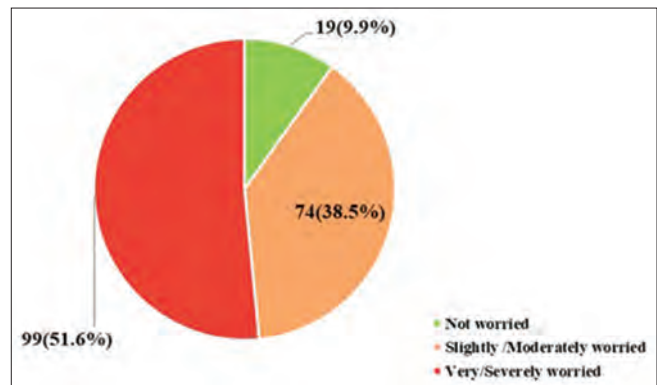


Figure 1: Psychological wellbeing of the participants

Regarding the questions on the psychological wellbeing of the participants, 76% of the participants were very/severely worried about getting infected with COVID-19 in the dental clinic, while 72.9% were very/severely worried about the availability of PPE in the dental clinic and 52.6% were very/severely worried about performing procedures in the dental clinic. Majority (81.2%) of the participants were worried about how to maintain social distancing in the dental clinic, while 80.7% were moderately to severely worried about

Table 2: Psychological well being of the participants

Variable	Not worried, n (%)	Slightly worried, n (%)	Moderately worried, n (%)	Very worried, n (%)	Severely worried, n (%)
Performing procedures in the dental clinic	32 (16.7)	18 (9.4)	41 (21.4)	37 (19.3)	64 (33.3)
Maintain social distancing in the dental clinic	36 (18.8)	12 (6.3)	35 (18.2)	40 (20.8)	69 (35.9)
Getting infected with COVID-19 from the dental clinic.	9 (4.7)	9 (4.7)	28 (14.6)	43 (22.4)	103 (53.6)
Availability of adequate personal protective equipment for use in the dental clinic	22 (11.5)	8 (4.2)	22 (11.5)	33 (17.1)	107 (55.7)
Maintain social distancing in my office	37 (19.3)	22 (11.5)	36 (18.8)	35 (18.2)	62 (32.3)

COVID-19: Coronavirus disease 2019

Table 3: Association between psychosocial wellbeing and sociodemographic variables

	Mean psychosocial impact score	P
Age group (years)		0.701
≤24	18.3±4.4	
25-34	18.3±5.4	
≥35	19.1±4.5	
Gender		0.263
Male	19.1±4.9	
Female	18.2±4.9	
Marital status		0.121
Single	18.1±5.1	
Married	19.3±4.4	
Ethnicity		0.639
Yoruba	18.6±4.8	
Igbo	17.9±4.9	
Hausa	19.4±5.4	
Others	17.2±5.4	
Self-reported medical condition		0.902
Yes	18.6±4.8	
No	18.4±4.9	
If they believe COVID-19 exists		0.376
Yes	18.4±4.9	
No	16.7±3.9	

COVID-19: Coronavirus disease 2019

maintaining social distancing in their office. Table 2 reveals the psychological well-being of the participants.

Psychosocial impact had no significant associations with age ($P = 0.693$), gender ($P = 0.263$), marital status ($P = 0.121$) and ethnicity ($P = 0.639$) [Table 3].

DISCUSSION

The ongoing COVID-19 pandemic came with a big scare considering the high rate of infectivity with the SARS-CoV-2 virus. This is coupled with the daily reports on the global mortality from COVID-19 by health institutions/experts such as the WHO and CDC.^[2,15] Health care workers who work in close contact with patients are said to be at the greatest risk of the COVID-19 infection.^[16,17] Dental therapists are among such workers and the large volume of aerosol-generating procedures they perform particularly in form of scaling and

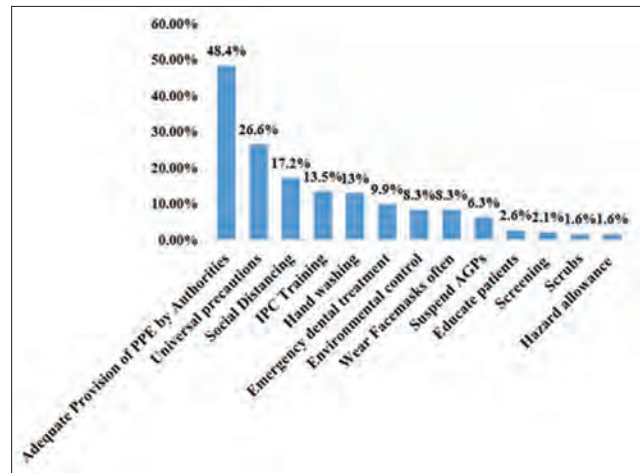


Figure 2: Participants' concerns and suggestions about COVID-19

polishing, particularly ultrasonic scaling may place them at such a risk.

Studies have documented mental health issues and psychological effects among dental health care workers during the ongoing COVID-19 pandemic.^[10-12] Some of the factors associated with the psychosocial effects of COVID-19 among dental healthcare givers include the mental and social health consequences following social distancing, self-isolation, fear, and impact of being infected with the virus on their health, fears around PPE such as insufficient PPE at work, and the difficulties associated with social distancing both at the workplace and in the public.^[11] The aim of the study was to determine the psychosocial well-being of dental therapists in Nigeria during the COVID-19 pandemic.

This study found that the participants exhibited elevated levels of anxiety about carrying out procedures during the COVID-19 pandemic as 90.1% had varying levels of worry about how the disease affected their lives and families. Of particular concern is the proportion of participants who were very/severely worried (51.6%). The apprehension of the participants might be associated with the fear of contracting COVID-19 infection from the dental patients while performing procedures on them. This is because of the 95.3% who were worried about getting infected with COVID-19 from the dental clinic. There is a dearth of studies on how COVID-19 affects the mental state of health

of dental therapists, limiting comparison. Nevertheless, some studies have described the impact of COVID-19 among dentists and other dental staff. The high proportion of participants who were worried in the current study is similar to the nearly 85% of dentists in Italy who reported concern about contracting the SARS-CoV-2 infection during their clinical activity.^[18] The perception of the negative impact of the pandemic among the Italian dentists was accompanied by feelings of concern in 70.2%, anxiety in 46.4%, and fear in 42.4%.^[18]

Interestingly, the proportion of participants in the current study who were severely worried about contracting the virus in our study was far higher (53.6%) than the Italian dentists (20.2%). This may stem from grave concerns about the availability of PPE for clinical use by the participants because about 55.7% of them were also severely concerned about PPE availability for their use in the clinic. It is pertinent to note that the data collection coincided with the period when there was an unprecedented severe shortage of PPE on a global scale and uncertainty about the supply chain in Nigerian health-care facilities were the order of the day. One may posit that if more developed countries during the COVID-19 pandemic had acute shortage of PPE,^[19,20] how much more Nigeria, with its existing restricted/limited funding for health-care institutions. As recently highlighted in a review, the weak health care systems in countries in sub-Saharan Africa increases the chances of an immense impact of COVID-19 on mental health.^[11]

The ability to maintain social/physical distancing in the dental clinic/offices was also of serious concern to the participants in the current study as only 18.8% and 19.3% were not worried about how to ensure or practice social distancing in the clinic and office, respectively. It should be brought to the fore that there was a lockdown (partial and total) during the study period in different states in Nigeria. The detrimental effects of the disease and the related steps to curb it such as social distancing, quarantine, and self-isolation on mental stability have been documented.^[13] Recent studies have also reported COVID-19 related psychological distress among Nigerians, especially during the lockdown periods.^[21,22] One could therefore infer that the participants were concerned and faced with the challenge of social distancing at the workplace again and its potential impact on their mental and emotional wellbeing.

Indeed, factors such as physical or social distancing, the fear of the virus, reduced access to PPE, and increased need for infection control procedures, have all been identified as being contributory to a mental imbalance among health-care givers.^[10,23] Dental therapists being a part of the dental care team may thus be affected. The data collection for the present study coincided with the period of great uncertainties about the availability of PPEs for health-care workers not just in Nigeria but globally. This was a very scary time for most health workers as many felt vulnerable being the frontline responders to people infected with the disease. Their anxiety may have been further compounded by the limited information on the transmission of COVID-19 via airborne or aerosols during the data collection. It

was not surprising then to find that one of the earliest guidelines for dental practitioners by health management experts was to stop or minimize AGPs in dental clinics globally.^[24]

It is also noteworthy to highlight the proportion of participants in this study, although small (8.3%) who self-reported at least one medical condition. The WHO has reiterated that the risk of developing severe illness from COVID-19 is higher in those with preexisting medical problems such as hypertension, lung disease, and diabetes.^[25]

Inadequate supply of PPEs, lack of training on Infection Control, and Prevention regarding COVID-19 can generate phobia and anxiety among the participants knowing that they are at high risk of contracting COVID-19. This was expressed in the open-ended (qualitative) aspect of the study by a significant proportion of the therapists (48.4%) who expressed concern about the inadequate provision of PPEs by their various health institutions. In view of the wide geographic spread and distribution of the participants across the country, this buttresses an important need that should be addressed immediately and be on the front burner for the government and the relevant authorities. Otherwise, this may have a negative impact on their ability to deliver efficient health-care services to their patients due to anxiety or fear of contracting the infection if they perceive that they are not adequately protected.

The period of the study coincided with the total lockdown declared by the Federal government of Nigeria on all sectors as a means to prevent the spread of the virus. The anxiety level in the current study may have also been a reflection of the impact of the lockdown as people, colleagues and families were isolated or separated. Anxiety disorders have been reported to occur more likely in the absence of interpersonal communication.^[26,27] Shacham *et al.*^[12] suggested that the current COVID-19 pandemic may cause higher subjective overload in individuals who have less coping skills than stressors such as job demands, in addition to social isolation, which prevents teamwork. The other major concerns raised by the participants in the present study included the need to be more stringent about preventive measures including universal precautions, the need for social distancing and IPC training.

We can deduce that the participants perceived the dental clinic as being riskier for spreading COVID-19 as they did not consider the current state of their dental clinic/office environment safe enough to practice safely without contracting the disease. No doubt, that this will negatively affect the psychological state of the dental therapists. A study by Ogolodom *et al.* carried out among healthcare givers in south-south Nigeria shared a similar view, as they identified some militating factors against the successful implementation of the rightful obligations of the government such as the absence of indemnity and the fear of getting infected with the virus. They reported that enhancement of safety measures in the workplace will encourage health workers' willingness to work effectively and perform their duties during the pandemic.^[8] Another study conducted by Olaseni *et al.*^[21] among the general population, revealed

that Nigerians experienced psychological distress during COVID-19 and recommended that the Government and the key actors in the health sector should provide psychological health services for Nigerians.

To effectively curb the spread of COVID-19, the participants suggested some preventive measures; universal precaution (26.6%), hand washing (13%), suspension of AGPs (6.3%), patient education (2.6%), screening of everyone at the point of entry (2.1%) to the dental clinic, and wearing scrubs to attend to patients (1.6%). Some of these measures were already in place before the COVID-19 pandemic. However, COVID-19 has highlighted the need to scale up some of these protocols due to its high infectivity. In the study by Consolo *et al.*,^[18] the participants (dentists) subscribed to the fact that modifying their PPE during the COVID-19 pandemic would give them more protection. This will further boost the confidence of dental therapists and ensure safe practices. Villani *et al.*^[28] further reiterated the relevance of phone triaging with/or questionnaires in the clinic, wearing of PPE, disinfection of surfaces with 62%–71% of ethanol, large-capacity cannulas to aspirate, and high-speed instruments with an anti-retraction system, amongst others.

The unavailability of definitive treatment, particularly vaccines for COVID-19 during the period of the data collection for the present study might have also heightened the apprehension of the study participants.^[3] On a positive note, however, advances in COVID-19 vaccine development have been made as some have been authorized and recommended in the United States by the CDC and include Pfizer-BioNTech COVID-19 vaccine and Moderna's COVID-19 vaccine.^[29] Other vaccines are in Phase 3 Clinical Trials including AstraZeneca's COVID-19 vaccine, Janssen's COVID-19 vaccine, and Novavax's COVID-19 vaccine.^[29] Sadly as at the time of this report, Nigeria is yet to commence vaccine administration for its citizens.

This study found some level of phobia and anxiety among participants which can be greatly reduced by the provision of adequate dental equipment, proper education, and a safe working environment. The participants were eager to perform their duties as long as the work environment is safe. All six geopolitical zones of the country were adequately represented in this study which is a strength of this study. One of the limitations of the present study was the fact that a validated tool was not used to evaluate the psychosocial impact of COVID-19 among the study participants. Notwithstanding, the study still provides some useful information on the impact of COVID-19 on the psychosocial well-being of dental therapists practicing within the shores of Nigeria. Future studies will utilize a validated tool to measure the psychosocial effect. Furthermore, some technical issues with the online data collection could have made some potential participants unwilling to participate or unable to supply applicable answers. This is however not uncommon with online data collection surveys.

CONCLUSION

The anxiety level of the majority of the participants over

contracting COVID-19 from their patients was high, as most were worried about how the disease would affect their lives. There is a need for government institutions to provide regular psychological support to dental therapists to minimize such effects. The provision of PPE and training on Infection Prevention and Control will also reduce the psychosocial stress among dental therapists as they are willing to care for patients in a safe and secure environment. Hospital management should step-up the existing health, safety, and environmental policies and proper education of patients attending the health-care centers. There should also be consideration of adequate indemnity for these and other health workers. We propose further studies in the nearest future to assess the availability of satisfactory PPE at health-care facilities.

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Conflicts of interest

There are no conflicts of interest.

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