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Original Article

Professional Teeth Scaling by Dentists and Dental Therapists During COVID-19 Pandemic

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ABSTRACT

The recent advent of the COVID-19 pandemic has caused widespread public health concerns and affected provision of health care including the delivery of professional teeth scaling by dental professionals. A cross-sectional online survey of dentists and dental therapists in Rivers State, Nigeria. Questionnaires were distributed to consenting participants using SurveyMonkey. Data were collected on sociodemographic, practice of scaling, and knowledge of recommended guidelines by WHO/CDC on the use of preoperative mouth rinses and Personal Protective Equipment (PPE). Data analysis was done and level of significance was set at p-value < 0.05. Sixty-three dentists and 34 dental therapists participated in this study with a mean age of 35.71±8.58 years. About two-third of the respondents did not perform teeth scaling for their patients during the early pandemic period. Fifty percent of dental professionals in government owned dental clinics performed teeth scaling while none of the private clinic staff did the procedure. The major reason for not performing the procedure was non provision of PPEs followed by fear of contacting the virus. Most (84.1%) of the dentists and 47.1% of dental therapists demonstrated a good knowledge of the recommended guidelines. Almost all (94.7%) of the private clinic staffs demonstrated a good knowledge compared to 65.4% of dental professionals in the government owned clinics. More than half of the dentists and only a few dental therapists performed scaling for their patients during the early period of the pandemic. Dentists and private clinic staffs demonstrated a good knowledge of the recommended guidelines for treatment.

Keywords: COVID-19, Professional Scaling, Dentist, Dental Therapist, Recommended Guideline.

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INTRODUCTION

Professional scaling is a routine cleaning of the oral cavity done by dentist/dental therapist. It is a non-surgical periodontal procedure that is done to remove plaque, calculus and other tooth deposits. It is commonly called scaling and polishing. Plaque and calculus accumulation are the major cause of gingivitis which can subsequently lead to periodontitis if not treated. When periodontitis is not managed early, it can progress to tooth mobility and eventual tooth loss with a significant effect on one's quality of life [1]. It is recommended that people should go through this procedure at least twice a year to ensure maintenance of good oral hygiene. Teeth scaling can be done using hand instruments and/or ultrasonic scalers. However, due to the generation of aerosols associated with the use of ultrasonic scalers; experts have advised against doing the procedure during the recent outbreak of COVID-19 [2].

COVID-19 is a novel viral infection that emanated from Wuhan, Hubei Province, China in December 2019.[2,3] It is scientifically termed Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).[2] The virus later spread exponentially to different parts of the world with a mortality rate of 3.4%.[4] The virus can spread from an infected person via respiratory droplets that reach the eyes, mouth and nose of another person.[5] Also, there is evidence of transmission through aerosol generating procedures such as ultrasonic scaling during dental clinical care of COVID-19 patients.[4,5] Furthermore, there is a very high viral load in saliva of both symptomatic and asymptomatic patients.[6] These factors put both the dental professionals and their patients at higher risk of infection, as dental procedures are carried out in close proximity to patients.[6,7] The uncertainties around airborne viral transmission and shortages of personal protective equipment (PPE) led regulating authorities around the world to issue guidance limiting or forbidding dental services.[5-7] However, the financial implication of the pandemic has led some dental professionals to continue working though there seems to have been a general inclination to suspend elective care and focus on emergencies, which do not generate as much revenue.[3] Moreso, World Health Organization issued a guidance document recommending the provision of essential oral health services.[7] The document outlined patient triage, infection control and selection of low-risk interventions with the best possible protection of patients, providers and public health.[3,7] This study aimed to assess the practice and knowledge of recommended guidelines for teeth scaling by dentists and dental therapists during the COVID-19 pandemic in Port Harcourt, Rivers State, Nigeria.

METHODOLOGY

The study was a cross-sectional online survey done between March and July 2020. It was approved by the Research and Ethics Committee, University of Port Harcourt Teaching Hospital, Rivers State. The sample size was calculated considering a 95% confidence level, 5% margin of error, expected dentist and dental therapist population of 180 according to data from the National Association (Rivers State chapter) of the two professional bodies and 85% response distribution, the minimum required sample size was calculated using the online Raosoft sample size calculator (http://www.raosoft.com/samplesize.html) designed specifically for population surveys to be 95.

The main instrument used to collect data was an online semi-structured questionnaire using the free-access SurveyMonkey and it is available at: https://www.surveymonkey.com. Upon clicking on the link, the 1st page assured the confidentiality of data, informed the participants of the study objectives and stated that study participation was purely voluntary. The survey comprised 10 questions on sociodemographic data, practice of scaling, and knowledge of recommended guidelines by WHO/CDC on the use of preoperative mouthrinses and PPE. The knowledge of the respondents on the recommended guidelines by WHO/CDC on infection control measures was assessed by three questions and a correct response was assigned one mark, whilst a negative response was scored 0. A total score of ≥2 was termed 'good knowledge' while a total score of less than 2 was termed 'poor knowledge'.

The participants consent to participate in the study was implied when they clicked on the 'next' button to answer the questionnaire, and they had complete freedom either to decline or not. A submission was considered only when the 'submit' button was clicked at the end of the questionnaire. Only the principal investigator had access to the data and no personal details (e-mail address, phone number, name, etc.) were required.

After a face-validity by the researchers and an expert; a pilot study was done on 5 dentists and 5 dental therapists to validate the questionnaire and its Cronbach's alpha (α) was found to be 0.72. The pilot study responses and incomplete responses were excluded from the main analysis. Both convenience sampling (researchers themselves contacted dentists and dental therapists to participate in the study) and snowball sampling (the

participating dentists and dental therapist were asked to forward the questionnaire to their colleagues) were used so that maximal participation could be ensured. The questionnaire was distributed personally via WhatsApp.

The data were extracted from SurveyMonkey and analysis was done using IBM SPSS for Windows, v.25.0 (IBM Corp., Armonk, USA). Descriptive statistics were expressed in frequency and percentages. Association between categorical variables was done using the Chi-square (χ^2) test with Fisher's exact correction. Statistical significance was set at $P < 0.05$.

RESULTS

The baseline characteristics of the participants are shown in Table 1. The study included a total of 97 respondents comprising 63 dentists and 34 dental therapists. Their mean age was 35.71±8.58 years and age ranged from 22 to 55 years. There were more females (57.7%) than males and majority (80.4%) were working in government owned dental clinics.

Table 1. Sociodemographic variables of study participants

Sociodemographic variables		N	%
Age group(years)	20-29	27	27.8
	30-39	37	38.1
	40-49	25	25.8
	>50	8	8.2
Mean age (Mean±SD)		35.71±8.58years	
Age range		22-55years	
Gender	Male	41	42.3
	Female	56	57.7
Cadre	Dentist	63	64.9
	Dental therapist	34	35.1
Place of work	Govt	78	80.4
	Private	19	19.6
Total		**97**	**100.0**

Table 2 showed that up to 60% of the respondents did not perform teeth scaling for their patients during the early pandemic period. Majority of the males (68.3%) performed scaling during that time while most of the females (80.4%) did not, and this was statistically significant (p=0.000). Likewise, while most (57.1%) of the dentists performed scaling, only 8.8% of the dental therapists did scaling during the early period of the pandemic. Fifty percent of dental professionals in government owned dental clinics performed teeth scaling while none of the private clinic staff did the procedure.

Table 2: Association of sociodemographic variables and practice of teeth scaling during the pandemic

Sociodemographic Variables	Practice scaling during pandemic				Chi-square	p-value
	Yes		No			
	N	%	N	%		
Age group						
20-29	10	(37.0)	17	(63.0)		
30-39	10	(27.0)	27	(73.0)	10.86	0.013
40-49	12	(48.0)	13	(52.0)		
>50	7	(87.5)	1	(12.5)		
Gender						
Male	28	(68.3)	13	(31.7)	23.30	<0.0001
Female	11	(19.6)	45	(80.4)		
Cadre						
Dentist	36	(57.1)	27	(42.9)	21.45	<0.0001
Dental therapist	3	(8.8)	31	(91.2)		
Place of work						
Government owned clinic	39	(50.0)	39	(50.0)	15.88	<0.0001
Private clinic	0	(0.0)	19	(100.0)		
Total	**39**	**(40.2)**	**58**	**(59.8)**		

The major reason for not performing the procedure was non provision of PPEs followed by fear of contacting the virus as shown in Table 3.

Table 3: Reasons for not doing teeth scaling during the pandemic

	Place of work						Chi-square, p-value
	Government owned clinic		Private clinic		Total		
	N	%	N	%	N	%	
Afraid of contacting virus	11	(28.2)	10	(52.6)	21	(36.2)	19.62, 0.002
No provision of PPEs	23	(59.0)	0	(0.0)	23	(39.7)	
Only attended to emergencies	5	(12.8)	9	(47.4)	14	(24.1)	
Total	**39**	**(100.0)**	**19**	**(100.0)**	**58**	**(100.0)**	

More than 70% of the respondents demonstrated a good knowledge of the recommended guidelines. However, the dentists (84.1%) significantly outscored the dental therapists (47.1%) in knowledge of the recommended guidelines by WHO/CDC on infection control. Almost all the professionals in private clinics demonstrated a good knowledge compared to 65.4% of dental professionals in the government owned clinics. Also, most of the dentists and dental therapists that performed teeth scaling during the early pandemic period demonstrated good knowledge as shown in Table 4.

Table 4: Association of knowledge of recommended practice guidelines and some independent variables

Variables	Knowledge of recommended guidelines				Chi-square	p-value
	Good		Poor			
	N	%	N	%		
Age group(years)						
20-29	20	(74.1)	7	(25.9)		
30-39	21	(56.8)	16	(43.2)		
40-49	23	(92.0)	2	(8.0)	9.43	0.024*
>50	5	(62.5)	3	(37.5)		
Practice of scaling						
Yes	35	(89.7)	4	(10.3)	11.0	0.001*
No	34	(58.6)	24	(41.4)		
Cadre						
Dentist	53	(84.1)	10	(15.9)	14.77	<0.0001*
Dental therapist	16	(47.1)	18	(52.9)		
Place of work						
Government owned clinic	51	(65.4)	27	(34.6)	6.41	0.011*
Private clinic	18	(94.7)	1	(5.3)		
Total	**69**	**(71.1)**	**28**	**(28.9)**		

DISCUSSION

The advent of covid-19 pandemic challenged the delivery of healthcare services all around the world. [3,4] Hence, it became imperative to reorient healthcare delivery including dental practice to ensure reduction in the spread of the viral infection. The fear of contacting or spreading the virus among patients led dental professionals to limit their services to just treating emergencies.[5] However, because some countries recorded an upsurge in dental infections due to reduced routine utilization of oral healthcare services during the pandemic, there was the need to reinstate full dental treatment.[3,8] In order to achieve this, WHO/CDC and Federal Ministry of Health in Nigeria recommended some guidelines to ensure a minimal risk of spread of infection during the pandemic.[7] The recommended guideline by CDC for routine teeth scaling were the use of

PPEs (this includes the use of N-95/surgical mask, face shield, gown, boots and hair protection), preoperative mouth rinse and gargle with diluted 1.5% hydrogen peroxide and/or 0.2% povidone iodine for 1 minute, use of high-speed suction and priority to manual scaling and polishing instead of ultrasonic techniques or the change of facemasks after 20 minutes when using ultrasonic scaler.[10]

In this study, up to two thirds of the respondents did not perform routine teeth scaling for their patients during the early covid-19 pandemic. This is similar to studies done in Brazil and Spain where there was a significant reduction in the number of patients seen by dentists during the early pandemic. [11,12] However, more of the dentists performed the procedure compared to the dental therapists in this study. Zhang et al. [13] also observed that dentists were more prepared to work during the pandemic compared to other dental healthcare providers. The decrease in the number of patients seen in this study and also observed in other studies during the early pandemic was attributed to fear of contacting the virus, shortage of PPEs in the early stage of the pandemic, prioritization of PPEs supply and Ministry of Health directives to care for dental emergencies only. [11-14] It is worthy of note that none of the private dental professionals performed routine teeth scaling in this study despite having no complaints about provision of PPEs. This is in contrast to the study by Moraes et al. [11] where 52% of private dentists reported seeing less patients than usual due to the pandemic. The fear that private clinics owners had of being tainted with an incidence of covid-19 may have contributed to the findings in this study despite the financial burden of the pandemic on their business. Also, the aerosolized cloud in dental clinics and hearing news about covid-19 deaths is a constant reminder of danger.[14]

In this study; age, cadre, place of work and practice of teeth scaling were significant influencing factors for knowledge of the recommended guidelines by WHO/CDC on infection control when performing teeth scaling. The dentists significantly outscored the dental therapists in knowledge of infection control during pandemic as observed in other previous studies. [13-15] Also, older dental professionals and those working in private clinics had adequate knowledge compared with their counterparts. These findings support the widespread assumption that expertise and years of experience contribute to rational and evidence-based approach to tackle any situation.[15] Dentists are more likely to keep up-to-date with current knowledge of guidelines issued from various international and national health agencies, which was probably reflected in this study. Moreover, dentists have more chances for professional development and obtaining profound infection control training when compared to dental therapists.[16]

The findings of this study suggest that knowledge of recommended guidelines should be enhanced regularly among young dental professionals (most especially dental therapists) through mandatory continuing education programmes. Also, infection control protocols should be incorporated into dental education curricula in the different cadre of dental profession. Regular training in infection control measures will boost the confidence of healthcare workers in attending to patients or treating covid-19 patients during the pandemic.

CONCLUSION

About 60% of the respondents did not perform teeth scaling for their patients during the early pandemic period, though, more than 70% of them demonstrated a good knowledge of the recommended guidelines. Dentists and private clinic staffs demonstrated a good knowledge of the recommended guidelines for treatment.

Conflict of Interests.

We declare no competing interests

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REFERENCES

1. Petrini M. The Vital Importance of Gum Health. *Journal of Dental Research*. 2021;100(1):8-9. doi:10.1177/0022034520970527.
2. Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. Journal of Dental Research2020;99(5):481-487. doi:10.1177/0022034520914246.
3. Hewlett SA, Blankson PK, Konadu AB, Osei-Tutu K, Aprese D, Adjei M et al. COVID-19 pandemic and dental practice in Ghana. Ghana Medical Journal 2020 ;54(4):100-103.
4. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). International journal of surgery 2020; 76:71-76.
5. Benzian H, Beltrán-Aguilar E, Mathur MR, Niederman R. Pandemic Considerations on Essential Oral Health Care. Journal of dental research. 2020;9:1-5.
6. Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. N Engl J Med 2020;382(16):1564-1567.
7. World Health Organization (WHO). 2020. Consideration for the provision of essential oral health services in the context of COVID-19. Interim guidance [accessed 2021 March 19]. https://www.who.int/publications/i/item/who-2019-nCoV-oral-health-2020.1
8. Guo H, Zhou Y, Liu X, Tan J. The impact of the COVID-19 epidemic on the utilization of emergency dental services. J Dent Sci. 2020.
9. Covid-19: Guidelines/Standard operational procedures for dental practice in Nigeria. https://www.health.gov.ng/doc/covid-19-for-dental-practice-in-nigeria.pdf Accessed March 21, 2021.
10. Centers for Disease Control and Prevention. Interim infection prevention and control guidance for dental settings during the COVID-19 response; 2020. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html.
11. Moraes RR, Correa MB, Queiroz AB, Daneris Aˆ, Lopes JP, Pereira-Cenci T, et al. (2020) COVID-19 challenges to dentistry in the new pandemic epicenter: Brazil. PLoS ONE 15(11): e0242251. https://doi.org/10.1371/journal. pone.0242251
12. Chamorro-Petronacci C, Martin Carreras-Presas C, Sanz-Marchena A, A Rodrı´guez-Ferna´ndez M, Marı´a Sua´rez-Quintanilla J, Rivas-Mundiña B, et al. Assessment of the economic and health-care impact of COVID-19 (SARS-CoV-2) on public and private dental surgeries in Spain: A pilot study. Int J Environ Res Public Health 2020; 17(14):5139.
13. Zhang M, Zhou M, Tang F, Wang Y, Nie H, Zhang L, et al. Knowledge, attitude and practice regarding COVID-19 among health care workers in Henan, China. J Hosp Infect. 2020; 105: 183–187.
14. Kamate SK, Sharma S, Thakar S, Srivastava D, Sengupta K, Hadi AJ, et al. Assessing knowledge, attitudes and practices of dental practitioners regarding the COVID-19 pandemic: A multinational study. Dent Med Probl. 2020; 57: 11–17.
15. Srivastava KC, Shrivastava D, Sghaireen MG, Alsharari AF, Alduraywish AA, Al-Johani K, Alam MK, Khader Y, Alzarea BK. Knowledge, attitudes and practices regarding COVID-19 among dental health care professionals: a cross-sectional study in Saudi Arabia. Journal of International Medical Research. 2020 Dec;48(12)
16. Althomairy SA, Baseer MA, Assery M, Alsaffan AD. Knowledge and attitude of dental health professionals about middle east respiratory syndrome in Saudi Arabia. Journal of International Society of Preventive & Community Dentistry. 2018;8(2):137.