Original Article

Professional Oral Prophylaxis: Assessment of Practice by Oral Health Professionals in Southeastern Nigeria

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Abstract

Background: Professional oral prophylaxis reduces plaque and calculus levels and improves oral health. This study identified the practice of routine scaling and polishing among oral health professionals. **Methodology:** This was a cross-sectional study of 73 oral health professionals who attended the Southeast Oral Health Forum at Onitsha, Anambra State, Nigeria. Data on sociodemographic profile, the undertaking of scaling and polishing of the teeth, reasons for the scaling and polishing, recommendation of scaling and polishing to their patients, and duration of recall were recorded. Data analysis was done using SPSS Version 21. The association between demographic profile and practice of scaling and polishing at 6 months' interval was tested using the Chi-square test at a significance level of $P < 0.05$. **Results:** The study participants were 43 (58.9%) males and 30 (41.1%) females, and the age range was 23–56 years. All (100.0%) oral health professionals in the study had undertaken scaling and polishing previously. Many respondents (75.3%) scaled and polished routinely twice a year, while 90.6% recommended the procedure to their patients at six months' interval to enable them monitor their patients' oral hygiene (85.9%). Those aged 21–30 years (75.0%) ($P < 0.001$) and < 5 years in clinical practice (74.3%) ($P = 0.01$) undertook scaling and polishing at six months' interval or less. Lack of time (34.5%) was the main reason that prevented oral health professionals from undertaking scaling and polishing. **Conclusion:** Dental therapists have had scaling and polishing done more than dentists and dental technologists within the last six months. Age and duration of clinical practice were significantly associated with obtaining scaling and polishing at 6 monthly intervals, whereas lack of time was a major reason for not undergoing six monthly scaling and polishing.

Keywords: Calculus, dental professionals, oral prophylaxis, plaque

Introduction

Professional oral prophylaxis involves scaling and polishing of the teeth to remove harmful dental deposits, such as plaque and calculus as well as extrinsic teeth stains, without resorting to the use of antimicrobial agents or periodontal surgery.[1] It is a preventive dental procedure used to mitigate the occurrence of periodontal diseases and dental caries.[1,2] Apart from the removal of these teeth deposits, it also improves the esthetics of the teeth and restorations once those are carried out.[3]

Oral healthcare professionals are the persons who convey evidence-based knowledge of oral healthcare to the public; they are in the position to influence their patient's oral health-related behavior.[4] Thus, dentists need to be seen or heard embracing routine scaling and polishing.[5,6]

To improve the oral hygiene status of individuals, the World Health Organization endorsed a process labeled "recommended oral self-care" (ROSC), whereby individuals take responsibility for their own oral hygiene.[7] ROSC includes tooth brushing more than once a day, reduced consumption of sugar-containing snacks to once daily or rarely, and regular use of fluoride-containing toothpaste.[8] Results of a randomized control trial in an the adult population, conducted in the United Kingdom by Worthington *et al*., showed that scaling and polishing removed a substantial amount of calculus in the respondents while tooth brushing does not remove calculus.[1]

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Periodontal disease is one of the most important contributors to the global oral health burdens,[9] and the key causative agents for periodontal diseases are plaque and calculus.[10] Oral health professionals have cited the necessity and obvious advantages of scaling and polishing in reducing or preventing the occurrence of these diseases.[11,12]

It is recommended that scaling and polishing should be done regularly, and as such, this procedure has been advocated to be performed in patients annually or biannually.[11,13] It was reported by Lamont *et al*. that better oral health was achieved if scaling and polishing were done biannually compared to annually.[11] Oral health professionals play an important role in educating their patients and providing preventive services, such as scaling and polishing to mitigate the effects of oral disease; however, little is known about whether these same professionals "practice what they preach."

Oral health professionals are promoters of oral health and are expected to be role models to their patients. Evaluation of the practice of scaling and polishing among oral health professionals themselves will provide an insight into their practices and recommendation of scaling and polishing for their patients, especially for those with poor oral hygiene practices.[14] Prior studies on ROSC showed that in India, only a few dentists (19.6%) practiced ROSC,[8] while in Iran, 27% of the dentists practiced ROSC.[15] In Nigeria, only 45.5% of dentists brushed twice a day.[5] These findings show that knowledge may not translate to practice as reported in an earlier study in Nigeria.[16]

Most studies in Nigeria[16-18] about the uptake of oral health prevention practices, especially scaling and polishing, focus mainly on nonoral healthcare professionals and the lay public. The findings showed that uptake of scaling and polishing was dependent on age, awareness, and socioeconomic state of the individual.[17] Another study done on those who had scaling and polishing showed that skilled workers and those in high socioeconomic groups sought scaling and polishing more than unskilled workers and those in lower socioeconomic groups.[19]

A study was conducted on the scaling and polishing practice of dental healthcare professionals' in Southwestern Nigeria with 88.6% of them obtaining scaling and polishing;[5] however, there is no known study investigating the scaling and polishing practice of oral healthcare professionals in the southeastern region of Nigeria. In a bid to fill this existing gap in knowledge, the study assessed the uptake of scaling and polishing among the different cadres of oral healthcare professionals (dentists, dental therapists, and dental technologists) paying attention to the relationship between sex, age, and duration of practice and obtaining scaling and polishing.

Methodology

The study was conducted in Anambra state in the southeastern region of Nigeria. The region is made up of five states of the 36 states of the country, and it is mainly inhabited by the Igbo ethnic group.[20] The region the University of Nigeria, Nsukka, where dental surgeons are trained, and Federal College of Dental Technology and Therapy, Enugu, where dental technologists and therapists are trained. Qualified dental surgeons work either in various government, private, or both establishments in the region. The study population comprised dental surgeons, dental therapists, and dental technologists working within the southeastern region of the country, who attended the Southeast Oral Health Forum at General Hospital, Onitsha, Anambra state. The forum was organized by the Nigeria Dental Association of the region in 2016.

This was a descriptive, cross-sectional study of all oral health professionals who attended the Southeast Oral Health Forum at the General Hospital, Onitsha, Anambra State, Southeast Nigeria in 2016. Ethical clearance for this study was obtained from the ethical review board of the University of Nigeria Teaching Hospital, Enugu (IRB 00002323), and only individuals who gave informed consent participated in this study.

The sample size was calculated using the formula $P \times q/(SE)^2$ by Aniebue,[21] where P = prevalence, $q = 100 - p$, and SE = sampling error tolerated. A prevalence of 88.6% obtained from the literature on obtaining scaling and polishing by oral health professionals[5] was used with an SE of 5% to estimate the sample size for the study.

$$\text{Sample size} = \frac{88.6 \times 11.4}{5 \times 5} = \frac{1595.44}{25} = 40.4$$

To accommodate for non responders, 10% of this figure was added to give a minimum sample size of 44.4. However, 75 dental professionals participated in the study.

A close-ended questionnaire was developed to elicit information from the dental health professionals. This questionnaire was validated using face-and-content validity. The questionnaire was given to two experts in the field not involved in the study to determine the suitability of the questions to context. Thereafter, the content of questionnaires was validated using information from the literature review. The questionnaire was pretested by administering it to five oral health professionals two weeks before the final study. These professionals were not part of the final study. The self-administered questionnaire was divided into three sections. The first section focused on the sociodemographic profile of the oral health professionals (sex, age, duration of service, and specialty). The second section elicited information on the uptake of scaling and polishing by the oral health professionals, such as the last time the procedure was done, reasons for the scaling and polishing, and reason for not undergoing the procedure in the last six months. The third section of the questionnaire elicited information on whether dental professionals recommended scaling and polishing to their patients. Reasons for recommendation and duration of recall visit were also elicited.

Data were analyzed using the Statistical Package of the Social Sciences (SPSS) version 21 IBM, Chicago, IL, USA. Results were expressed using frequency tables, percentages, and bar

Table 1: Sociodemographic characteristics of the study participants (*n*=73)

Variables	Frequency, *n* (%)
Age (years)	
21-30	48 (65.8)
31-40	16 (21.9)
≥41	9 (12.3)
Total	73 (100.0)
Sex	
Male	43 (58.9)
Female	30 (41.1)
Total	73 (100.0)
Specialties	
Dental surgeon	41 (56.2)
Dental therapists	23 (31.5)
Dental technologists	9 (12.3)
Total	73 (100.0)
Previous history of scaling and polishing	
Yes	73 (100.0)
No	0 (0.0)
Total	73 (100.0)
Time interval of undergoing scaling and polishing	
<6 months	27 (37.0)
6 months ago	17 (23.3)
A year ago	10 (13.7)
More than a year ago	19 (26.0)
Total	73 (100.0)
Duration of clinical practice (years)	
Below 5	43 (58.9)
5-10	22 (30.1)
11 and above	8 (11.0)
Total	73 (100.0)

charts. Test of association between sociodemographic factors and obtaining scaling and polishing was conducted using Chi-square tests. Factors associated with obtaining scaling and polishing were considered statistically significant at level of $P < 0.05$.

Results

Table 1 shows that 75 dental professionals were recruited but two returned uncompleted questionnaires; hence, 73 dental professionals participated in the study. The participants were made up of the following: 41 (56.2%) dental surgeons; 23 (31.5%) dental therapists; and 9 (12.3%) dental technologists. There were 43 (58.9%) males and 30 (41.1%) females, most 43 (58.9%) had worked for <5 years, and all (100.0%) have had scaling and polishing in the past.

Figure 1 shows that most of the respondents did scaling and polishing as a part of their normal preventive dental routine. The major reason for undertaking scaling and polishing (55, 75.3%) was "for routine purposes." Other reasons included having deposits on the teeth (17, 23.3%) and mouth odor (1, 1.4%).

Table 2 shows that those aged 21–30 years (75.0%) undertook scaling and polishing at six months or less interval when compared to those aged 31–40 years (43.8%) and those aged 41 years and above (11.1%) ($P<0.001$). Furthermore, those who were below five years in service (74.4%) undertook scaling and polishing more than those who were 5–10 years (45.5%) and 11 years and above (25.0%) in service, respectively ($P=0.01$). There was no significant association between sex ($P=0.16$) and specialty ($P=0.19$) and undertaking scaling and polishing.

Table 2: Association between sociodemographic characteristics, specialty and duration of scaling and polishing among dental professionals

Variable	Scaled 6 months and below		Total	*P*
	Yes	No		
Age (years)				
21-30	36 (75.0)	12 (25.0)	48 (100.0)	<0.001*
31-40	7 (43.8)	9 (56.2)	16 (100.0)	
≥41	1 (11.1)	8 (88.9)	9 (100.0)	
Sex				
Male	23 (53.5)	20 (46.5)	43 (100.0)	0.16
Female	21 (70.0)	9 (30.0)	30 (100.0)	
Duration of clinical practice (years)				
Below 5	32 (74.4)	11 (25.6)	43 (100.0)	0.01*
5-10	10 (45.5)	12 (54.5)	22 (100.0)	
11 and above	2 (25.0)	6 (75.0)	8 (100.0)	
Specialty				
Dental surgeons	21 (51.2)	20 (48.8)	41 (100.0)	0.19
Therapists	17 (73.9)	6 (26.1)	23 (100.0)	
Technologists	6 (66.7)	3 (33.3)	9 (100.0)	
Total	44 (60.3)	29 (39.7)	73 (100.0)	

*Chi-square test

Figure 2 highlights the respondents (10, 34.5%) who stated that their reason for not keeping to the six monthly routine scaling and polishing was because they lacked the time. Other reasons included having healthy gums (8, 27.6%), laxity (4, 13.8%), and no reason (7, 24.2%).

Figure 3 shows that majority (55, 85.9%) of the respondents recommended scaling and polishing to their clients so as to maintain good oral hygiene, while (9, 14.1%) recommended it to serve as an opportunity for a routine check.

Figure 4 shows that majority (58, 90.6%) of the respondents recall patients for scaling and polishing at six monthly intervals, while 1 (1.6%) respondent recalls patients at yearly intervals and 5 (7.8%) recall patients depending on the individual case.

Discussion

The study showed that all dental professionals had done scaling and polishing at some time in their professional careers.

Scaling and polishing prevent periodontal disease which is an oral health disease burden.[7] In this study, many dental professionals undertook scaling and polishing routinely probably because of the benefits associated with it.[1] Dental professionals who are in the frontline of oral care are aware of the benefits of good oral hygiene and professional oral prophylaxis, and as such would do all to remove deposits on the teeth to prevent oral disease.

Findings from this study also showed that age influences adherence to routine 6 monthly scaling and polishing. This is similar to the finding from a prior study.[5] Younger professionals sought scaling and polishing more than the older professionals probably because the younger dental professionals are interested in their physical appearance when compared to the older ones. One can also deduce that since the younger respondents have been in practice for a shorter time and so have invariably just graduated from school[5] or are in one postgraduate program or the other, they would be more conversant with newer oral hygiene practices and are more inclined to adapt to the strict protocol since that is what they have recently learned.

Area of specialty seemed to influence when scaling and polishing was done and adherence to bi-annual visits.

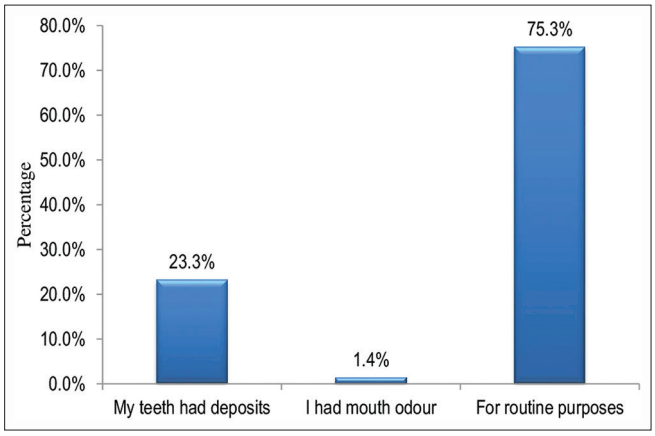

Figure 1: Reasons for undertaking scaling and polishing by dental professionals

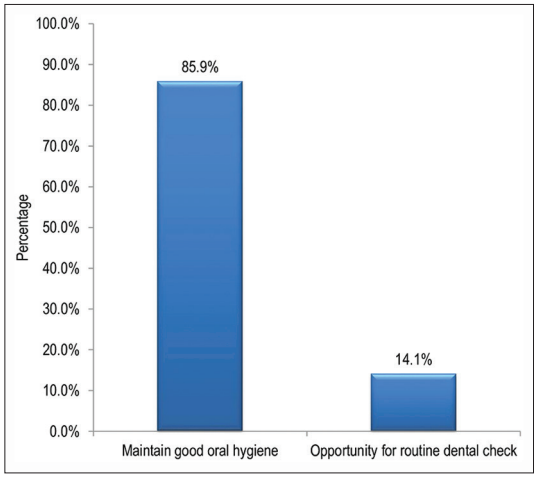

Figure 3: Reasons for recommendation of scaling and polishing to patients (n = 64)

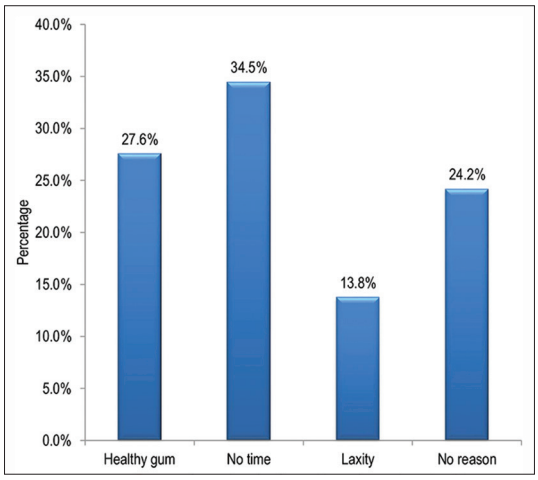

Figure 2: Reasons for not keeping 6 monthly routine scaling and polishing (n = 29)

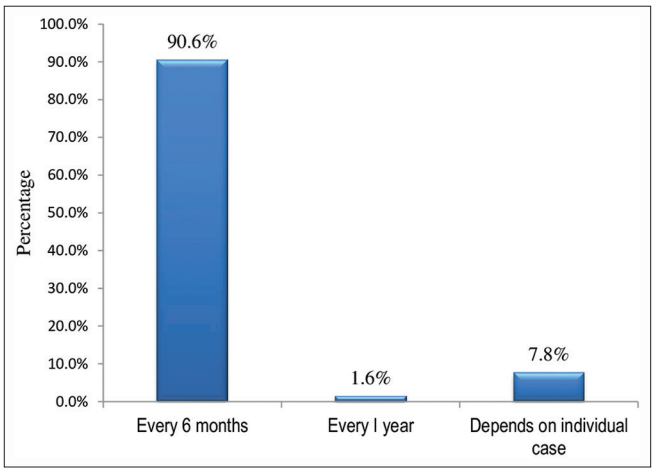

Figure 4: Frequency of recall of patients for scaling and polishing (n = 64)

However, we observed that a greater percentage of dental therapists undertook scaling and polishing more than the other respondents. This could be because the therapist's major duty is to render scaling and polishing to patients, and this would have affected their practice of scaling and polishing.

However, some professionals had scaling and polishing at more than six months' interval because they claimed to have good oral hygiene. This is in line with the observation from other studies which state that scaling and polishing are necessary when there is poor oral hygiene.[11,22,23] However, this attitude to scaling and polishing is similar to what was obtainable in non-dental professionals or the lay public who do not have adequate oral health knowledge.[24] Oral health professionals who should be aware of oral diseases and the importance of the scaling and polishing procedure, only do so when there is a threat of oral disease. Lack of time was another reason given by some professionals for scaling and polishing at more than six months' interval. This is similar to the finding in a prior study where < 50% of the dentists had undergone scaling and polishing in the preceding 6 months.[5] Another study had noted that healthcare workers do not take care of their oral health as it should be due to their tight work schedule.[25] Our study made a similar finding as some claimed that lack of time delayed their undergoing scaling and polishing.

Respondents who did scaling and polishing at shorter intervals (<6 months) would probably have had symptoms of ongoing periodontal disease sequel to heavy calculus deposits or might have had a social habit such as smoking or tobacco chewing, which stains their teeth. Thus, they scale and polish their teeth for purely esthetic or curative reasons.

In this study, most professionals recommended biannual scaling and polishing to their patients with the intention of monitoring their oral hygiene practices and keeping them in optimal oral health. In Nigeria, this is laudable because the awareness of oral health as well as good oral hygiene practice is suboptimal among the general public.[26] This study might then allude to the fact that other factors such as the cost of the procedure, socioeconomic status of individuals, or a inadequate number of oral health professionals, may be driving the suboptimal oral hygiene practice in Nigeria.[26] One limitation of this study is the small number of oral health professionals who participated in this study; hence, the findings may not be generalized to all oral health professionals in the southeastern part of the country. Nevertheless, it provides an insight into the practice of scaling and polishing among oral health professionals and also serves as a reference for future studies. It is recommended that oral health professionals practice their knowledge of oral prophylaxis so as to be good ambassadors of the profession. A national study is also recommended to obtain national figures which can be generalizable.

Conclusion

Dental therapists have had scaling and polishing more than dentists and dental technologists.

Age and duration of clinical practice were significantly associated with obtaining scaling and polishing at six monthly intervals.

Lack of time is a major contributor to poor adherence to biannual scaling and polishing by oral health professionals.

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Conflicts of interest

There are no conflicts of interest.

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