



Research Articles

Oral Hygiene Practices and Use of Interdental Cleaning Aids among Dental Students and Interns in Seven Dental Schools in Nigeria

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SUMMARY

Objective: To assess the oral hygiene practices of dental students and house officers in dental schools in Nigeria.

Methods: This was a cross sectional study conducted among dental students in 500 and 600 levels and the house officers in 7 of the 11 Dental Schools in Nigeria. Pre-tested self-administered questionnaires eliciting participants' demographic details, oral hygiene practices and the use of interdental cleaning aids were used. Data was analysed using SPSS Package version 20.0.

Results: Two hundred and thirty-one participants were recruited for this study. The M:F ratio was 1.08:1 with mean age of 25.34 ± 3.60 years. 132(57.2%) of the participants brushed their teeth twice daily and all participants used fluoride-containing toothpastes. 17(7.4%) of the participants brushed with both tooth brushes and chewing sticks. 146(63.2%) of the participants cleaned interdentally of whom 124(84.9%) used interdental brushes and dental floss. Of the 85(36.8%) who did not clean interdentally, 39(45.9%) said they could not get access to interdental cleaning aids, 20(23.5%) thought it was not necessary and 22(25.9%) did not know they should be used. Of all the participants, 108(51.7%) did Scaling and Polishing within 6 months prior to the study period.

Conclusions: Though the practise of oral hygiene among Dental students and interns was good, there is still the need to emphasize the need and rationale for interdental cleaning among them.

INTRODUCTION

A good oral hygiene practice is essential for the removal of bacterial dental plaque; the primary causative factor in the aetiology of periodontal diseases such as gingivitis and periodontitis. Though, dental plaque-induced gingivitis is reversible,[1] its progression to periodontitis is attributed to a change in the environmental equilibrium that favours the disease condition. Since gingivitis is a risk factor in the clinical course of chronic periodontitis,[2] it is important to treat gingivitis when inflammation is only in the gingival tissues and has not affected other parts of the periodontium.[3,4] The maintenance of a good oral health is thus very crucial for overall well-being and an improved health-related quality of life,[3,4] since poor oral health affects appearance, resulting in stained or missing teeth; contributes to bad breath[5] and negatively influences self-confidence, self-esteem and communication.[6] Poor oral health can also present with oral pain which may lead to discomfort when eating, drinking and speaking, thus affecting quality of life.[7]

Although the incidence of periodontal disease differs in different regions of the world, its prevention has a significant healthcare and economic benefit to both the society and individuals.[8,9] Hence, regular and effective

daily removal of dental plaque by individuals as well as professional plaque removal by Dentists and Dental Hygienists twice annually is important for oral health maintenance.[10-12]

Toothbrushing is the most common method for removing dental plaque,[13,14] but unfortunately regular toothbrushes cannot get into the small gaps between the teeth, or the tiny crevices where the teeth meet the gums- an area where gum disease often starts from. Periodontitis is more prevalent and severe in interproximal surfaces as compared to free surfaces.[15,16] This has been linked to difficulties in plaque control in these areas.

Interdental cleaners or interdental cleaning aids such as Dental Floss and Interdental Brushes, are highly recommended for the removal of dental plaque from interproximal areas of the teeth and they are widely available.[17,18] They have been found to be effective depending upon the targeted area of the interdental space. Dental floss is the most widely used interdental cleaning device.[19,20] However, it requires dexterity and might be difficult in areas with previous periodontal breakdown. Interdental brushes were designed in order to better access difficult-to-reach interproximal areas, facilitating supragingival plaque control.[21] They offer the advantage of

being available in wider and new thinner versions to accommodate the various dimensions of the interdental spaces and patients with poor dexterity often find interdental brushes easier to use. Thus, the choice and selection of interdental cleaning aid depends on preference, availability, interdental anatomy and dexterity of the user.[22]

This study therefore assessed the oral hygiene practices and the use of interdental cleaning aids among Dental students and Interns.

MATERIALS AND METHODS

This was a cross-sectional study conducted among dental students in 500 and 600 levels and the House officers in seven Dental Schools in Nigeria. Dentistry is offered as an undergraduate course in eleven universities in Nigeria. Four of these universities are located in the Western part of Nigeria: University of Lagos (UNILAG), Lagos State University (LASU), University of Ibadan (UI) and Obafemi Awolowo University (OAU); three in the South-South region: University of Benin (UNIBEN), University of Port Harcourt (UNIPORT) and University of Calabar (UNICAL); one in the Eastern region: University of Enugu; and three in the Northern part of Nigeria: University of Maiduguri (UNIMAID), Bayero University, Kano (BUK) and University of Jos (UNIJOS). Seven universities participated in this study. They are University of Lagos (UNILAG), Lagos State University (LASU), University of Ibadan (UI), Obafemi Awolowo University (OAU), University of Benin (UNIBEN), University of Port Harcourt (UNIPORT) and University of Maiduguri (UNIMAID).

Approval for the study was obtained from the Health Research and Ethics Committee of Lagos State University Teaching Hospital (LASUTH). All participants also completed a written informed consent form which explained the study to them. Two hundred and thirty-one clinical Dental students in their penultimate (500 Level) and final years (600 Level) and the Interns (House Officers) who gave consent were recruited for the study. Data was collected with pre-tested self-administered questionnaires eliciting biographic data, level of education, oral hygiene practices, use of interdental cleaning aids and reasons for non-use. Analysis was carried out using Statistical Package for Social Sciences for Windows version 20.0, SPSS Inc. Chicago IL. A descriptive analysis was generated and relationship between two parameters was determined using chi square. 5% level of significance was set for all comparisons.

RESULTS

Table 1 shows the demographic details of the participants. There were 231 participants aged between 19 and 49 years with mean age of 25.34 ± 3.60 years. Over 80% of the participants were in the 21 to 30 years age bracket.

About fifty percent of them were in the final year of dental education. Seven out of the 11 dental schools participated in the study. The other 4 could not be accessed: two (UNICAL and UNIJOS) could not participate because they are yet to have clinical students and we could not get participants from University of Enugu and Bayero University.

Table 2 shows the age group and level of education of the various participants from the various dental schools. 91.3% of the participants were in the 21-30 age group. All of the participants brushed their teeth with toothbrushes and fluoride-containing toothpastes. Seventeen (7%) used chewing sticks in addition to toothbrushes to clean their teeth. One hundred and thirty-two (57.2%) brushed their teeth twice daily. About 35% of them brushed once daily (Table 3).

About two-third (63.2%) of the participants cleaned interdentally. Of these, 71.2% used Dental Floss and 13.7% used Interdental Brushes. Of the one-third (36.8%) who did not clean interdentally, 45.9% said interdental cleaning aids were not available; 23.5% thought it was not necessary to clean interdentally; 3.5% did not know how to use interdental cleaning aids and a quarter (25.9%) did not know they should be used. Only one participant (1.2%) claimed not to have the time to clean interdentally (Table 3). Half of the participants (51.7%) had prophylaxis cleaning (Scaling and Polishing) done in the last 6 months and 10(9.6%) of them had never done Scaling and Polishing (Table 3).

The oral hygiene practice and the use of interdental cleaning aids of the participants based on their levels of education showed that more 600 level participants than 500 level participants and interns brushed their teeth twice daily. More 500 level participants clean interdentally (Table 4). 84.1%, 86.9% and 94.3% of 500 level participants, 600 level participants and interns respectively use either dental floss or interdental brushes as interdental cleaning aids. The only participant who claimed to not know how to use an interdental aid was in 500 level. One participant each in 500 level and 600 level do not know they should use interdental aids when cleaning their teeth (Table 4).

Considering the period of last scaling and polishing done by the participants, 62.3%, 77% and 77.2% of 500 level participants, 600 level participants and Interns respectively did Scaling and Polishing in the past one year. This was statistically significant (p value = 0.006). It was significant that their knowledge of the importance of doing Scaling and Polishing impacted their oral health practise. Table 4

Table 5 shows the reasons given by Participants of various dental schools for not using interdental cleaning aids. The reasons given by the participants of various Dental Schools for not using interdental cleaning aids are as shown in Table 5 and the reasons given by participants for not using interdental cleaning aids based on their education levels is shown in Table 6.

Table 1: Demographic details of Participants

Variables	Male		Female		Total		p
	Freq	%	Freq	%	Freq	%	
Age Group							
<20	1	0.8	2	1.8	3	1.3	0.154
21-30	106	88.3	105	94.6	211	91.3	
31-40	11	9.2	4	3.6	15	6.5	
41-50	2	1.7	0	0.0	2	0.9	
Total	120	100.0	111	100.0	231	100.0	
Level of Education							
500L	26	21.7	35	31.5	61	26.4	0.047
600L	68	56.6	45	40.6	113	48.9	
Internship	26	21.7	31	27.9	57	24.7	
Total	120	100.0	111	100.0	231	100.0	
Institution							
UNILAG	15	12.5	26	23.4	41	17.7	0.035
LASUCOM	7	5.8	6	5.4	13	5.6	
OAUTH	15	12.5	11	9.9	26	11.3	
UNIBEN	22	18.3	8	7.2	30	13.0	
UNIPOINT	17	14.2	16	14.4	33	14.3	
UI	18	15.0	27	24.4	45	19.5	
UNIMAID	26	21.7	17	15.3	43	18.6	
Total	120	100.0	111	100.0	231	100.0	
Religion							
Muslim	27	22.5	29	26.1	56	24.3	0.549
Christianity	92	76.6	82	73.9	174	75.3	
Traditional	1	0.9	0	0.0	1	0.4	
Total	120	100.0	111	100.0	231	100.0	

Table 2: Participants' age group and institution based on level of education

Variables	Level of Education of Participants						Total		χ^2	D	p
	500 L		600 L		Internship		Freq	%			
	Freq	%	Freq	%	Freq	%					
Age group									14.501	4	0.006
11-20	6	9.8	1	0.9	0	0.0	7	3.0	91.3		
21-30	52	85.2	107	94.7	5	2	91.2	211			
31-50	3	4.9	5	4.4	5	8.8	13	5.6			
Gender											
Male	26	42.6	68	60.2	26	45.6	120	51.9	6.107	2	0.047
Female	35	57.4	45	39.8	31	54.4	111	48.1			
Institutions											
UNILAG	19	31.1	1	0.9	21	36.8	41	17.7	89.645	12	<0.001
LASUCOM	5	8.2	7	6.2	1	1.8	13	5.6			
OAUTH	1	1.6	13	11.5	12	21.1	26	11.3			
UNIBEN	0	0.0	24	21.2	6	10.5	30	13.0			
UNIPOINT	3	4.9	25	22.1	5	8.8	33	14.3			
UI	23	37.7	19	16.8	3	5.3	45	19.5			
UNIMAID	10	16.4	24	21.2	9	15.8	43	18.6			
Total	61	100.0	113	100.0	57	100.0	231	100.0			

Table 3: Oral Hygiene Practice and Use of Interdental Cleaning Aids of Participants

Variables	500L		600L		Internship		Freq	%	p
	Freq	%	Freq	%	Freq	%			
Toothbrushing Aid									
Toothbrush	109	90.8			105	94.6	214	92.6	0.095
Toothbrush and Chewing Stick	11	9.2			6	5.4	17	7.4	
Total	120	100.0			111	100.0	231	100.0	
Type of Toothpaste									
Fluoride Toothpaste	120	100.0			111	100.0	231	100.0	
Total	120	100.0			111	100.0	231	100.0	
Frequency of Toothbrushing									
Once	33	27.5			47	42.3	80	34.6	0.011
Twice	77	64.2			55	49.6	132	57.2	
>Twice	10	8.3			9	8.1	19	8.2	
Total	120	100.0			111	100.0	231	100.0	
Interdental cleaning									
Yes	77	64.2			69	62.2	146	63.2	0.289
No	43	35.8			42	37.8	85	36.8	
Total	120	100.0			111	100.0	231	100.0	
Interdental Cleaning Aid									
Interdental Brush	9	11.7			11	15.9	20	13.7	0.652
Dental Floss	58	75.3			46	66.7	104	71.2	
Tooth Picks	8	10.4			12	17.4	20	13.7	
Others	2	2.6			0	0.0	2	1.4	
Total	77	100.0			69	100.0	146	100.0	
Reasons for not cleaning interdentally									
Not Necessary	9	20.9			11	26.2	20	23.5	0.725
Not Available	16	37.2			23	54.8	39	45.9	
Don't Know I Should Use It	15	34.9			7	16.6	22	25.9	
Don't Know How to Use It	2	4.7			1	2.4	3	3.5	
No Time	1	2.3			0	0.0	1	1.2	
Total	43	100.0			42	100.0	85	100.0	
Last professional dental cleaning									
Last 6 months	57	47.5			51	46.0	108	51.7	0.912
1 Year	21	17.5			18	16.2	39	18.7	
> 1 Year	26	21.7			26	23.4	42	20.1	
Never	17	14.3			16	14.4	20	9.6	
Total	120	100.0			111	100.0	231	100.0	

Table 4: Oral Hygiene Practice and use of interdental cleaning aids of participants based on level of education

Variables	Level of Education of the Participants								χ^2	d	p
	500L		600L		Internship		Total				
	Freq	%	Freq	%	Freq	%	Freq	%			
Frequency of Brushing									11.495	10	0.320
Once	28	45.9	39	34.5	24	42.1	91	39.4			
Twice	32	52.5	72	63.7	30	52.6	134	58.0			
>2x	1	1.6	2	11.8	3	3.5	6	1.3			
Total	61	100.0	113	100.0	57	100.0	231	100.0			
Cleaning Aids									7.193	6	0.303
Toothbrush	58	95.1	110	97.3	57	100.0	225	97.4			
Toothbrush and Chewing stick	3	4.9	3	2.7	0	0.0	6	1.7			
Total	61	100.0	113	100.0	57	100.0	231	100.0			
Interdental Cleaning									2.342	2	0.310
Yes	44	72.1	69	61.1	35	61.4	148	64.1			
No	17	27.9	44	38.9	22	38.6	83	35.9			
Total	61	100.0	113	100.0	57	100.0	231	100.0			
If Yes, with what?									3.646	6	0.725
Interdental brushes	8	18.2	11	15.9	5	14.3	24	16.2			
Dental Floss	29	65.9	49	71.0	28	80.0	106	71.6			
Tooth picks	7	15.9	8	11.6	2	5.7	17	11.5			
Others	0	0.0	1	1.4	0	0.0	1	0.7			
Total	44	100.0	69	100.0	35	100.0	148	100.0			
If No, Why?									10.000	6	0.125
Not Necessary	6	35.3	12	27.3	12	54.5	30	36.2			
Not Available	9	52.9	31	70.5	10	45.5	50	60.2			
Don't know how to use it	1	5.9	0	0.0	0	0.0	1	1.2			
Don't know I should use it	1	5.9	1	2.3	0	0.0	2	2.4			
Total	17	100.0	44	100.0	22	100.0	83	100.0			
Last Scaling and Polishing									18.286	6	0.006
Last 6 months	32	52.5	71	62.8	27	47.4	130	56.3			
1 Year	6	9.8	16	14.2	17	29.8	39	16.9			
>1 Year	12	19.7	20	17.7	10	17.5	42	18.2			
Never	11	18.0	6	5.3	3	5.3	20	8.6			
Total	61	100.0	113	100.0	57	100.0	231	100.0			

Table 5: Reasons given by Participants of various Dental Schools for not using interdental cleaning aids

Variables	Participating Dental Schools							Total Freq	χ^2	d	p
	UNILAG Freq	LASU- COM Freq	OAUTH Freq	UNIBEN Freq	UNI PORT Freq	UI Freq	UNI- MAID Freq				
Gender											
Male	15	7	15	22	17	18	26	120	13.561	6	0.035
Female	26	6	11	8	16	27	17	111			
Total	41	13	26	30	33	46	43	231			
Reasons for not cleaning interdentally											
Not Necessary	7	1	6	2	3	5	6	30	19.877	18	0.340
Not Available	9	2	5	7	10	11	6	50			
Don't know how to use it	1	0	0	0	0	0	0	1			
Don't know I should use it	0	1	0	0	0	1	0	2			
Total	17	4	11	9	13	17	12	83			

Table 6: Reasons given by Participants for not using interdental cleaning aids based on educational levels

Educational Levels	Reasons for not using interdental cleaning aids				Total
	Not Necessary	Not Available	Don't Know how to use it	Don't Know I should use it	
500L	6	9	1	1	17
600L	12	31	0	1	44
Interns	12	10	0	0	22
Total	30	50	1	2	83

DISCUSSION

This study assessed the oral hygiene practices of the clinical Dental students (500 and 600 levels) and Interns in some of the dental institutions in Nigeria. Dental students take a degree in Dentistry over a period of six (6) years and are taught Periodontology in their penultimate and final years. They are expected to have more knowledge and better practise of oral hygiene as well as know the importance of the use of interdental cleaning aids while cleaning the teeth. For many years now, emphasis has been on maintenance of a healthy mouth for overall general well-being. Preventive oral health practice is one of three important ways of keeping the mouth healthy. Others are knowledge and behaviour.[4,10,22]

The F:M ratio in this study was equal. Mean age was 25.34 ± 3.60 years in this study and lower than that recorded in another study done in Nigeria [23] that had 29.3 ± 10.5 years. The latter study was among older population. Although tooth brushing was the commonly used method of cleaning (92.6%), only 57.2% of the participants brushed their teeth twice daily. This is comparable to studies done among Police recruits in Karnataka and patients attending Out Patient Department at Vyas Dental College and Hospital, Jodhpur, India where 58% of their participants also brushed twice daily [24,25] but lower than studies done in Nigeria [26,27] and other developed countries [28-32] in which over 70% of their participants brushed once daily. Seventeen(7.4%) of the participants used chewing stick in addition to the tooth brush. Chewing stick is an acceptable tool for cleaning the teeth in Nigeria.[33]

All participants brushed with fluoride-containing toothpaste and this is commendable. It is a known fact that the most important and cost-effective way of preventing dental

caries is the inclusion of fluoride into dentifrices.[27]

Interdental spaces are spaces between teeth and they are usually inaccessible during brushing, hence the recommendation that interdental cleaning aids like dental floss and interdental brushes be used to clean them. Unfortunately, not many people do this as is reflected in this study where only two-third of the participants who consisted of a class of people who had been taught the importance supposed to be knowledgeable about the importance of cleaning in between the teeth did so. Dental students, Dental Interns, Dental Therapists and Dentists are taught the importance of removing dental plaque, the causative agent for periodontal diseases not only from the accessible parts of the teeth but also and especially from the inaccessible ones since studies [15,16] have shown that periodontitis is more prevalent and severe in interproximal surfaces as compared to free surfaces.

Considering the calibre of the participants recruited for this study, it was surprising also that 20(23.5%) of the participants thought it was not necessary to use interdental cleaning aids, 39(45.9%) said they were not available and another 22(25.9%) said they did not know that they should be used.

Of the participants who clean interdentally, 71.6% of them use dental floss while 16.2% use interdental brushes. This is not surprising as it is easier to have access to the latter than the former in Nigeria.[34] Twenty(3.7%) of the participants in this study claimed they use dental picks. A study [35] carried out in Canada recorded that 44% of their participants used dental floss.

Inflammation of the gingival results (gingivitis) is characterised by redness of the gingiva, gingival swelling and most times the patients complain of bleeding from the gum

while brushing.[2] Untreated gingivitis will lead to periodontitis and eventual tooth loss.[2,8] Scaling and Polishing (a periodontal non-surgical treatment) is a preventive measure taken to prevent the sequelae of untreated gingivitis. Considering the period of last scaling and polishing done by the participants, 62.3%, 77% and 77.2% of 500 level participants, 600 level participants and Interns respectively did Scaling and Polishing in the one year. It was significant that their knowledge of the importance of doing Scaling and Polishing impacted their oral health practise. More participants in the 600level and those on internship did scaling and polishing in the past one year preceding the study when compared to those in 500 level. This may be because the 500 level participants were yet to understand the important role Scaling and Polishing plays in the prevention and progression of periodontal diseases.

CONCLUSION

The practise of oral hygiene among Dental students and Interns was good but there is the need to emphasize the necessity and rationale for interdental cleaning among them.

Conflict of Interest

The authors declare no competing interests.

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