Dental Auxiliaries in Tertiary Hospitals in Nigeria; Oral Hygiene Practices and Dental Service Utilization

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ABSTRACT

Objective: This study was aimed at determining the oral self-care practices and dental service utilization among dental auxiliaries in teaching hospitals in Nigeria, and also to assess the dental utilization of their relatives.

Methods: This was a descriptive, cross-sectional multicenter study conducted among dental auxiliaries from three teaching hospitals in Nigeria, namely; University of Port Harcourt Teaching Hospital (UPTH) Port Harcourt, Rivers State, Lagos University Teaching Hospital (LUTH) Idi-araba, Lagos State and University College Hospital, (UCH) Ibadan, Oyo State Nigeria. Self-administered questionnaires were used to obtain information on participants' sociodemography, oral hygiene practices and dental service utilization. The self - rated oral health status was used to assess their oral health behavior (frequency of brushing, regular check-up and fluoride application). Statistical analysis was done using the IBM SPSS version 20.0. Statistical significance level was considered at $p \leq 0.05$.

Results: A total of 101 participants were enrolled into the study, consisting of dental nurses (16[15.8%]), dental technicians (21[20.8%]), dental technologists (46[45.5%]) and dental therapists (18[17.8%]). The mean age of the participants was 35.12 ± 8.89 years. Female: Male ratio was 2.26: 1. Most (90.1%) of the study participants rated their oral hygiene as excellent. Slightly over half (57.4%) brushed twice daily; 25% of the dental nurses, 52.4% of the dental technicians, 58.7% of the dental technologists and 88.9% of the dental therapists, this was statistically significant (p=0.002). Frequency of dental check-up for six months among the participants was low (31.7%). Only 31 (30.7%) of the participants had scaling and polishing done in the last 6 months. More of the dental nurses (93.8%) and technicians (71.4%) had invited their relatives for scaling and polishing compared to the other dental auxiliaries (p=0.0019).

Conclusion: Even though the dental therapists had better tooth brushing practices in this study, the oral hygiene practices and utilization of dental services by the dental auxiliaries were generally less than optimal. There was a disparity between the self-rated oral health status and oral health practices of the dental auxiliaries. There is need for better motivation of dental auxiliaries towards optimal oral hygiene behavior.

Keywords: Dental auxiliaries, Dental service utilization, Oral hygiene Practices, Self-rated oral health status

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INTRODUCTION

Good oral hygiene maintenance is critical towards reducing the prevalence of periodontal diseases and dental caries significantly. [1] In Nigeria, there remains a huge burden of untreated dental caries [2] and periodontal diseases, [3] which are the major causes of tooth loss in Nigeria. Although dentists have a huge role in mitigating these oral diseases, they are often complemented by dental auxiliaries to achieve optimum dental hygiene for the populace.[4] In addition to providing oral care, dental auxiliaries are important members of the dental team who are also promoters of good oral health,[5,6] as they have the prerequisite knowledge, skills, and professionalism to carry out their role.[7] Dental auxiliaries assist dentists in the management of dental patients and are classified into non-operating and operating dental groups.[8] Operating dental auxiliaries (dental therapists/hygienists) provide professional scaling of teeth, while the non-operating dental auxiliaries (dental nurses and dental surgery assistants) assist dentists during dental procedures. They assist in providing four- or six- handed dentistry, giving oral hygiene and other post-operative instructions to patients after dental procedures.[9] They can function in different work settings as clinicians, educators, researchers, administrators, entrepreneurs, and public health professionals.[7] Considering the immense contribution of dental auxiliaries to the care of patients, it is crucial that they themselves maintain satisfactory oral health knowledge and oral health practices that conform to professional standards.[10] It has been documented that dental care professionals, their health beliefs and attitudes may not just influence their oral self-care behavior but may also potentially affect their ability to motivate their patients to adopt preventive oral health measures.[11] It therefore stands to reason that with the high awareness level of the dental auxiliaries, they should positively impact their oral health practices, so they can play an essential role in the dental health education of patients and the populace at large.[12] These oral health practices include regular utilization of dental services particularly professional oral prophylaxis which is integral to improving oral health and general well-being.

Dental care utilization has been defined as the percentage of the population who access dental services over a 12 months period. [13] It is determined by the use of dental services and as such can be expressed in terms of dental visits made and services received over a specified period. [13]

The self-rated oral health status has been reported as the key element towards a better quality of life.[14] It involves a survey questionnaire in which participants assess the dimension of their own health and rate their own health as "excellent, very good, good, fair, or poor"[15] This self-rated oral health tool is utilized in epidemiological studies to monitor health services and in promoting oral health. It is also helpful in identifying the importance of the regular dental check -up, required treatment needs and collecting information related to oral health. [14] Most of the studies on self-rating oral health practices in Nigeria were carried out among university students, medical doctors and non-medical administrative workers.[16-18] In order to define the role of dental auxiliaries with more clarity, we were curious to know their self-rated oral health status and its relationship with their oral health practices and utilization of dental services. Also, to evaluate if their oral health knowledge had any influence on the dental utilization of their relatives. Information on the oral health practices of dental auxiliaries may influence their role in oral health promotion among their immediate families and the general population at large, considering the fact that people are more likely to teach and emphasize what they practice. [19] Thus, this study, was aimed at determining the self-rated oral health practices and pattern of utilization of dental services among dental auxiliaries in three teaching hospitals from the South-West and South-South Nigeria. We also determined the pattern of dental service utilization of the dental auxiliaries' relatives.

MATERIALS AND METHODS

This was a descriptive, cross-sectional multicenter study with centres selected based on convenience sampling, conducted among dental auxiliaries in dental centres at three tertiary hospitals in South-South and South-West zones of Nigeria, namely; University of Port Harcourt Teaching Hospital (UPTH) (South-South), Lagos University Teaching Hospital (LUTH) (South-West) and University College Hospital (UCH), Ibadan (South-West). Ethical approval (UPTH/ADM/90/S.II/VOL.XI/605) was sought and obtained from the Health Research Ethics Committee of the University of Port Harcourt Teaching Hospital, followed by participants' consent before commencing the study. The study population consisted of dental auxiliaries (dental nurses, dental therapists, dental technologists and dental technicians). A purposive non-probability sampling technique was utilized to recruit subjects from the three teaching hospitals, considering the limited sample size of the study population in each center of study.

Sample size determination

With reference to a previous study, participant's oral health practices of 81.4%,[10] The formula: N =

Z^2*pq/d^2 was utilized with a correction factor nf = n/1+n/N as the population was less than 10,000, the minimum sample size calculated was 91. Based on the estimated sample size of 137 (LUTH-67, UCH-30, Port Harcourt-40) A proportionate sampling technique was used.

After a face-validity of the questionnaires by two dentists, the questionnaires were pre-tested among dental auxiliaries in-training at Rivers state College of Health Science and Technology, Rumueme, Rivers state, to ensure simplicity and ease of understanding by the participants and the Cronbach alpha of 0.77 was estimated as a measure of internal consistency. Data was collected from the three teaching hospitals over a 4 week-period using self-administered questionnaires adapted from other studies encountered during the literature review. [10, 20] The questionnaire had four sections. Section A included information on socio-demography (age, gender, marital status, ethnicity) and work-related characteristics (clinical posting/units, year of practice, cadre i.e., dental nurse/assistant, dental therapist/hygienist, dental technician). Section B included information on the perception and attitude towards personal oral health practices. Section C had questions on the self-oral hygiene practices and pattern of dental service utilization. Section D had questions on the invitation of the dental auxiliaries' relatives by the participants to the dental clinic. The self -rated oral health status was used to assess their oral health practices (frequency of brushing, fluoride application) and the utilization of dental services (regular check-up). Statistical analysis was done using the IBM SPSS version 20.0. Categorical variables were expressed as frequencies with accompanying percentages. Differences between groups were compared using the Chi-square tests for categorical variables. Statistical significance was considered at $p \leq 0.05$.

RESULTS

Sociodemographic characteristics

The mean age of the study participants was 35.12 ± 8.89 years (age range 21 – 58 years). The mean age of the males was 32.89 ±7.26 years, while that of the females was 36.11± 9.39 years. There was no significant difference between the mean ages of males and females (p= 0.091). There was female preponderance (69.3%) with a female: male ratio of 2.26:1. A total of 137 questionnaires based on the estimated population per centre were distributed, however, 101 questionnaires were retrieved and answered accurately, which gives a percentage response of 73.7%. The number of participants was based on the number who gave their consent and completed the questionnaire, this consisted of dental nurses (16), dental technicians (21), dental technologists (46) and dental therapists/hygienists (18). The highest number of participants were from LUTH (46), then UPTH (36) and UCH (19). This is shown in table 1.

Self-reported oral hygiene practices

Most 91(90.1%) of the study participants rated their oral hygiene as excellent and 10(9.9%) rated their oral hygiene as fair (Table 2). More than half (57.4%) of the participants brushed twice daily. Comparing the frequency of brushing among the participants by cadre, twice daily brushing was practiced mostly by 88.9% of the dental therapists, 58.7% of the dental technologists, 52.4% of the dental technicians and least by the dental nurses (25%). This difference was statistically significant (p=0.002). Majority (81.2%) of the participants in all cadres brushed their teeth using toothbrush and fluoride toothpaste and there was no significant difference (p=0.245) across the different cadres. Only 22.8% and 16.8% of the participants practiced the roll and modified bass toothbrushing techniques respectively. Dental nurses and therapists practiced the roll technique (56.2% and 38.9%) and modified bass technique (6.2% and 27.8%) respectively compared with the other cadres (p< 0.001). Majority of the dental therapist (83.3%) and dental technicians (71.4%) use dental floss as interdental cleaning aid. (Table 3).

Previous Dental Service Utilization of Dental Auxiliaries

All the dental nurses (100%), dental therapist (100%) and 95.2% of the dental technicians had previously visited the dental clinic for dental treatment and this was statistically significant (p=0.049). 90.9% of the dental nurses and 75.0% of the dental technicians visited for scaling and polishing, while a very low percentage across the cadres visited for routine dental check-up in the last 12 months. (Table 4).

Utilization of dental services by participants

The frequency of dental check-up for the last six-months among the participants was low (31.7%), scaling and polishing done in the last six-months among the participants was also low (30.7%). More of the dental nurses (87.5%) and dental therapists (77.8%) has received dental treatment in their current hospital of practice, while the dental technologists were the least of the cadres that has received treatment from their current hospital of practice. The reasons given for not receiving treatment included 'don't have time', 'no dental compliant' and 'no specific reason'. (Table 5)

Table 1: Socio-demographics distribution of Participants

Variable	Frequency (n)	Percent (%)
Age group (years)		
20-29	33	32.7
30-39	36	35.6
40-49	26	25.7
50-59	6	5.9
Sex		
Female	70	69.3
Male	31	30.7
Marital status		
Married	61	60.4
Single/widowed	40	39.6
Ethnicity		
Hausa	4	3.96
Igbo	31	30.7
Others (Ijaw, Ikwerre, Ogoni)	20	19.8
Yoruba	46	45.5
Centre of study		
LUTH	46	45.5
UCH	19	18.8
UPTH	36	35.6
Cadre		
Dental nurse	16	15.8
Dental Technician	21	20.8
Dental Technologist	46	45.5
Dental Therapist/Hygienist	18	17.8
Job type		
Intern	28	27.7
Permanent	73	72.3
Year of practice		
0-9	65	64.4
10-19	26	25.7
20-29	5	5.0
30-39	5	5.0
Total	101	100.0

Table 2: Self oral hygiene rating of participants

Oral hygiene rating	Dental Nurse n (%)	Dental Technician n (%)	Dental Technologist n (%)	Dental Therapist n (%)	Total n (%)	P-value
Excellent	16) 100.0)	20(95.3)	37(80.4)	18(100.0)	91 (90.1)	0.04*#
Fair	0(0.0)	1(4.8)	9(19.6)	0(0.0)	10 (9.9)	
Total	16(100.0)	21(100.0)	46 (100.0)	18(100.0)	101(100.0)	

*Statistically significant #Fishers exact p-value

Table 3: Comparison of oral hygiene practices of the study participants

Variable	Dental Nurse n(%)	Dental Technician n(%)	Dental Technologist n(%)	Dental Therapist n(%)	Total n(%)	P-value
Frequency of tooth brushing						0.002*#
Once	12(75.0)	10(47.6)	19(41.3)	2 (11.1)	43(42.6)	
Twice	4(25.0)	11(52.4)	27(58.7)	16(88.9)	58(57.4)	
Time of day						0.008*#
MBBAN	1(6.3)	5(23.8)	17(37.0)	10(55.6)	33(32.7)	
MABAN	3(18.8)	6(28.6)	10(21.7)	6(33.3)	24(23.8)	
Morning after breakfast alone	0(0.0)	0(0.0)	5(10.9)	0(0.0)	6(5.9)	
Morning before breakfast alone	12(75.0)	10(47.6)	14(30.4)	2(11.1)	38(37.6)	
Cleaning Aid						0.245#
Toothbrush & chewing stick	1 (6.3)	1(4.8)	8(17.4)	1 (5.6)	11(10.9)	
Toothbrush & fluoride toothpaste	15(93.8)	19(90.5)	32 (69.6)	16(88.9)	82(81.2)	
Toothbrush & any toothpaste	0 (0.0)	1(4.8)	6 (13.0)	1(5.6)	8(7.9)	
Toothbrush type						0.257#
Hard	0(0.0)	0 (0.0)	3(6.5)	0(0.0)	3(3.0)	
Medium	15(93.4)	18(85.7)	36(78.3)	18(100.0)	87(86.1)	
Soft	0(0.0)	3(14.3)	6(13.0)	0(0.0)	9(8.9)	
Don't know	1(6.3)	0(0.0)	1(2.2)	0(0.0)	2(2.0)	
Brushing method						<0.001*#
Horizontal / scrub	1(6.2)	6(28.6)	15(32.6)	1(5.6)	23(22.8)	
Modified bass	1(6.2)	5(23.8)	6(13.0)	5(27.8)	17(16.8)	
Roll	9(56.2)	0(0.0)	7(15.2)	7(38.9)	23(22.8)	
Vertical	5(31.2)	6(28.6)	15(32.6)	1(5.6)	27(26.7)	
No response	0(0.0)	4(19.0)	15(6.5)	4(22.2)	11(10.9)	
Change of Toothbrush						
1-3 months	12(75.0)	18(85.7)	32(69.6)	14(77.8)	76(75.2)	0.553#
≥ 4 months	4(25.0)	3(14.3)	14(30.4)	4(22.2)	25(24.8)	
Use of interdental cleaning aid						
Yes, everyday	2(12.5)	4(19.0)	5(10.9)	8(44.4)	19(18.8)	0.07#
Yes,3-4 times a week	1(6.3)	4(19.0)	4(8.7)	3(16.7)	12(11.9)	
Occasionally	9(56.3)	10(47.6)	29(63.0)	7(38.9)	55(54.5)	
No	4(25.0)	3(14.3)	8(17.4)	0(0.0)	15(14.9)	
Type of interdental cleaning aid						0.299#
Dental floss	10(62.5)	15(71.4)	29(63.0)	15(83.3)	69(68.3)	
Dental floss and tooth pick	0(0.0)	1(4.8)	1(2.2)	1(5.6)	3(3.0)	
Interdental brush	0(0.0)	1(4.8)	0(0.0)	0(0.0)	1(1.0)	
Interdental brush and dental floss	1(6.3)	0(0.0)	0(0.0)	0(0.0)	1(1.0)	
Toothpick	1(6.3)	2(9.5)	8(17.4)	2(11.1)	13(12.9)	
No response	4(25.0)	2(9.5)	8(17.4)	0(0.0)	14(13.9)	
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	

MBBAN- Morning before breakfast and nighttime, MABAN – Morning after breakfast and nighttime *Statistically significant, #Fishers exact p-value

Table 4: Previous dental visits for dental treatment by participants

Dental visit pattern	Dental Nurse	Dental Technologist	Dental Technician	Dental Therapist	Total	P- value
Previous dental visits for dental treatment						0.049*#
Yes	16) 100.0)	20(95.2)	38(82.6)	18(100.0)	92(91.1)	
No	0(0.0)	1(4.8)	8(17.4)	0(0.0)	9(8.9)	
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Visited 12 months ago for dental treatment						0.064#
Yes	11(68.8)	16(76.2)	24(52.2)	15(83.3)	66(65.3)	
No	5(31.2)	5(23.8)	22(47.8)	3(16.7)	35(34.7)	
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Reasons for visit in last 12 months						0.072#
Failed restoration	0(0.0)	0(0.0)	0(0.0)	1(6.7)	1(1.5)	
Tooth decay	0(0.0)	2(12.5)	4(16.7)	0(0.0)	6(9.1)	
Replace missing teeth	0(0.0)	1(6.3)	0(0.0)	1(6.7)	2(3.0)	
Routine check up	1(9.1)	0(0.0)	2(8.3)	4(26.7)	7(10.6)	
Scaling & polishing	10(90.9)	12(75.0)	17(70.8)	9(60.0)	48(72.7)	
Toothache	0(0.0)	1(6.3)	1(4.2)	0(0.0)	2(3.0)	
Total	11(100.0)	16(100.0)	24(100.0)	15(100.0)	66(100.0)	

*Statistically significant #Fishers exact p-value

Dental Service Utilization of Dental Auxiliaries' Relatives

Regarding dental auxiliaries that had invited their relatives for routine dental check-up; we observed that 87.5% of the dental nurses had invited their relative. Also, the dental nurses (93.8%) and 71.4% of the dental technicians had invited their relatives for scaling and polishing. Ironically, only 50% of the dental therapists had invited their relative for scaling and polishing. This finding was statistically significant (p= 0.019), as shown in Table 6.

Reasons for not inviting relatives for routine dental check-up and/or scaling and polishing

Regarding the reasons given by dental auxiliaries for not encouraging their relatives to attend the dental clinic for routine dental check-up and/or scaling and polishing, majority gave no specific reasons, while others claimed that their residential areas were quite some distance to the hospital, these findings are shown in Figures 1 and 2.

DISCUSSION

Oral health has been incorporated by the World Health Organization (WHO) as an important component of general Health. [20] Hence, maintaining the oral health of patients is very crucial to their continued overall wellbeing. Dental auxiliaries are important personnel within the dental team that help to achieve this. As it is commonly known that one teaches what he/she practices,[19] it is therefore important to assess the oral health practices of the dental auxiliaries. Furthermore, the current emphasis by researchers on oral-systemic health in the overall wellbeing of people highlights the importance of having systemically healthy dental auxiliaries so they can function optimally. Hence the need to focus and take care of their own oral health.

The self-rated oral health status has been hypothesized to be associated with better oral health literacy and increased regular dental care, it gives a quick oral health assessment without the complex clinical examination.[21] The self -rated oral health status was used to evaluate their oral health practices (frequency of brushing, fluoride application) and the utilization of dental services (regular check-up) In this present study, the self-rated oral hygiene status of majority of the participants was rated excellent, which ideally indicates better oral health practices and increased regular dental check-up. However, only a large proportion of the dental therapist brush their teeth twice daily, while majority of the other cadres brush their teeth once daily, this finding is consistent with a report from another study.[22] This may be due to the fact that the dental therapists are involved in scaling and polishing for patients, and are aware of home care measures to reduce tooth deposits.

Table 5: Utilization of dental services by participants

Utilization pattern	Dental Nurse	Dental Technician	Dental Technologist	Dental Therapist	Total	P -value
Frequency of dental check up						0.215#
Dental problem/ complaint	1(6.3)	3(14.3)	2(4.3)	2(11.1)	8(7.9)	
Every 6 months	6(37.5)	8(38.1)	10(21.7)	8(44.4)	32(31.7)	
None	0(0.0)	2(9.5)	14(30.4)	3(16.7)	19(18.8)	
Once a year	5(31.2)	5(23.8)	8(17.4)	2(11.1)	20(19.8)	
For scaling & polishing	4(25.0)	3(14.3)	12(26.1)	3(16.7)	22(21.8)	
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Last Scaling & polishing received						0.186#
More than 12 months						
More than 6 months	4(25.0)	6(28.6)	24(52.2)	6(33.3)	40(39.6)	
Within the last 6 months	6(37.5)	10(47.6)	9(19.6)	5(27.8)	30(29.7)	
Total	6(37.5)	5(23.8)	13(28.2)	7(38.9)	31(30.7)	
	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Received dental treatment in current hospital						0.006*#
Yes	14(87.5)	15(71.4)	21(45.7)	14(77.8)	64(63.4)	
No	2(12.5)	6(28.6)	25(54.3)	4(22.2)	37(36.6)	
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
If yes, how long ago						0.034*#
More than 12 months						
More than 6 months	5(35.7)	1(6.7)	8(38.1)	4(28.6)	18(28.1)	
Within the last 6 months	5(35.7)	6(40.0)	6(28.6)	5(35.7)	22(34.4)	
Total	4(28.6)	8(53.3)	7(33.3)	5(35.7)	24(37.5)	
	14(100.0)	15(100.0)	21(100.0)	14(100.0)	64(100.0)	
Dental treatment received						0.010*#
Curettage	0(0.0)	2(13.3)	0(0.0)	0(0.0)	2(3.1)	
Filling	1(7.1)	2(13.3)	4(19.1)	1(7.1)	8(12.5)	
Root canal therapy	0(0.0)	1(6.7)	0(0.0)	1(7.1)	2(3.1)	
Surgicalextraction	2(14.3)	0(0.0)	0(0.0)	2(14.3)	4(6.3)	
Scaling & polishing	11(78.6)	10(66.7)	17(80.9)	10(71.4)	48(75.0)	
Total	14(100.0)	15(100.0)	21(100.0)	14(100.0)	64(100.0)	
Reason for not receiving treatment in current hospital						0.314#
Don't feel free	0(0.0)	0(0.0)	1(4.0)	0(0.0)	1(2.7)	
Don't have time	0(0.0)	3(50.0)	3(12.0)	1(25.0)	7(18.9)	
Fear	0(0.0)	0(0.0)	1(4.0)	0(0.0)	1(2.7)	
No dental complaint	2(100.0)	2(33.3)	9(36.0)	0(0.0)	13(35.1)	
No specific reason	0(0.0)	1(16.7)	11(44.0)	3(75.0)	15(40.5)	
Total	2(100.0)	6(100.0)	25(100.0)	4(100.0)	37(100.0)	

*Statistically significant, #Fishers exact p-value

Table 6: Invitation of relatives for dental check-up and/or scaling &polishing by participants

Variable	Dental Nurse	Dental Technician	Dental Technologist	Dental Therapist	Total	P -value
Invited a relative for check up						
Yes	14(87.5)	14(66.7)	30(65.2)	12(66.7)	70(69.3)	
No	2(12.5	7(33.3)	16(34.8)	6(33.3)	31(30.7)	0.395#
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Relative invited for routine check up						
Immediate	11(78.6)	10(71.4)	19(63.3)	4(33.3)	44(62.9)	0.131#
family	0(0.0)	1(7.1)	7(23.3)	4(33.3)	12(17.1)	
Extended	3(21.4)	3(21.4)	4(13.3)	4(33.3)	14(20.0)	
family	14(100.0)	14(100.0)	30(100.0)	12(100.0)	70(100.0)	
Both						
Total						
Invited relative for scaling & polishing						
Yes	15(93.8)	15(71.4)	25(54.3)	9(50.0)	64(63.4)	
No	1(6.3)	6(28.6)	21(45.7)	9(50.0)	37(36.6)	0.019*#
Total	16(100.0)	21(100.0)	46(100.0)	18(100.0)	101(100.0)	
Relative invited for scaling & polishing						
Immediate						
family	10(66.7)	12(80.0)	15(60.0)	5(55.6)	42(65.6)	
Extended						0.193#
family	2(13.3)	2(13.3)	9(36.0)	4(44.4)	17(26.6)	
Both	3(20.0)	1(6.7)	1(4.0)	0(0.0)	5(7.8)	
Total	15(100.0)	15(100.0)	25(100.0)	9(100.0)	64(100.0)	

*Statistically significant , #Fishers exact p-value

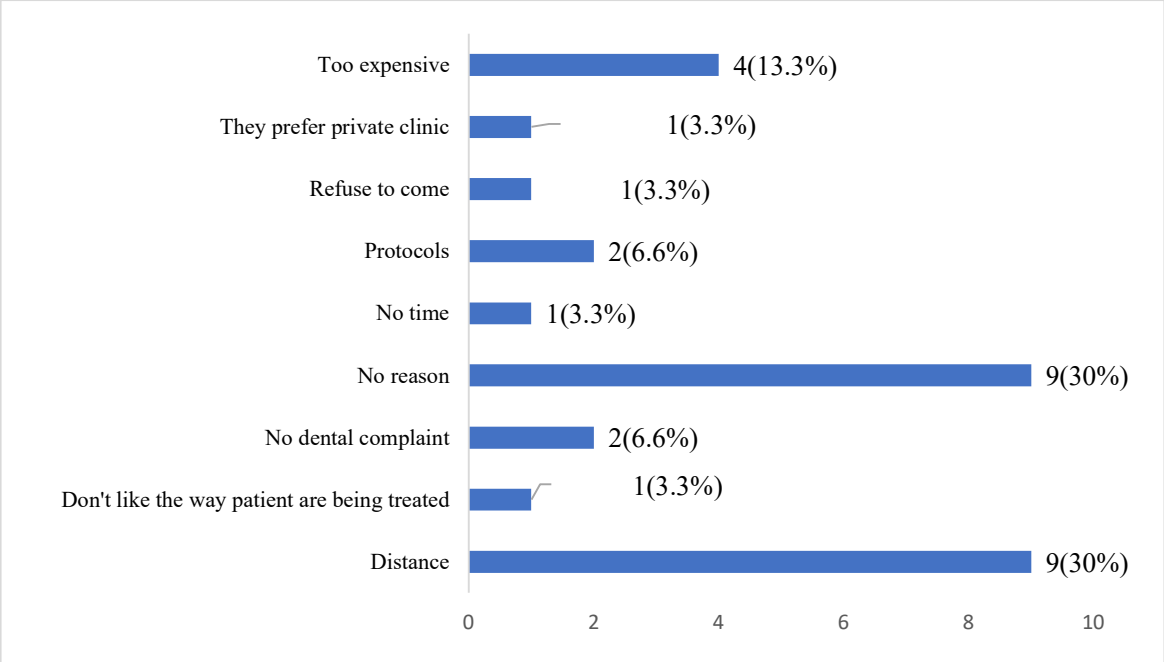

Figure 1: Reasons for not inviting relatives for routine check up

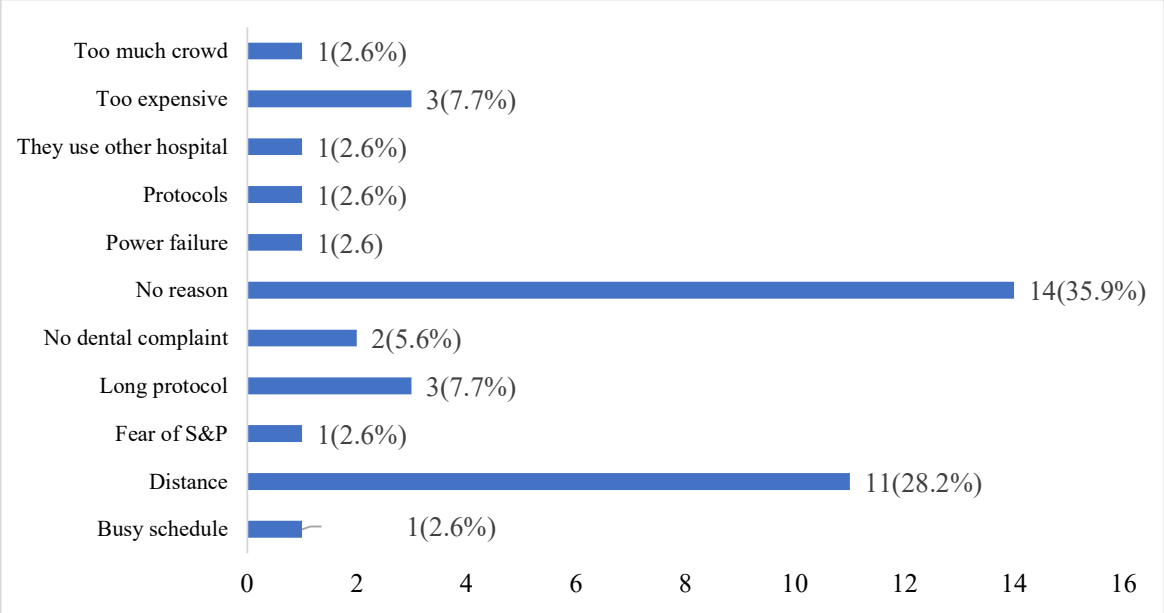

Figure 2: Reasons for not inviting relatives for scaling and polishing

A very low proportion of the participants visited the dental clinic in the last six-months for regular dental check-up and scaling and polishing, this is unacceptable, especially, the dental nurses, who usually give the oral hygiene instructions and advice the patients to visit the dental clinic every six-months for regular dental check-up and scaling and polishing. This shows that there is a disparity between the self-rated oral hygiene status of the participants and their oral health practices. Also, these highlights signify a discrepancy in the domain of learning of the dental nurses. There are three domains of learning; this includes the cognitive domain (knowledge), affective domain(attitude) and psychomotor (skills).[23] The dental nurses in this present study are expected to have a psychomotor domain of learning, to teach the patients the idea skill of oral practices. However, majority of the dental nurses in this present study had the cognitive domain of learning because they themselves do not put into practice what they claimed to know. The American Dental Association recommends that toothbrushing should be done twice daily for about two minutes using a fluoride toothpaste to achieve significant reduction in the amount of plaque accumulation and improved oral hygiene.[24] Equally, the Nigerian Dental Association emphasizes brushing twice daily, using a fluoride toothpaste for fresh breath and to avoid dental diseases.[25]

We found in this study that some participants brushed their teeth before breakfast and nighttime, while others brushed after breakfast and nighttime which could have been a matter of preference. In a study conducted by Attin, [26] it was recommended that toothbrushing should be done after breakfast to reduce food impaction and plaque biofilm, resulting in a healthier oral hygiene. However, a study by Jiang [27] reported that there was no evidence to support the superiority of toothbrushing after breakfast over brushing before breakfast or the ideal time for optimal results.[27] It is not surprising that majority of the participants used toothbrush and fluoride toothpaste as cleaning aid, with some using chewing stick in addition, this finding is comparable to a previous study,[28] while very few used any type of toothpaste, which should be discouraged. Fluoride has been documented to improve oral health, by being incorporated into enamel during the time of brushing,[29] and is also taken up by oral soft tissues and plaque[30] hence boosting its protective effect on enamel.

Majority of the participants brushed their teeth using medium textured toothbrushes, which is appropriate. A large number of the participants used the modified bass technique and the roll brushing technique, while others used the horizontal/scrub and vertical brushing methods. There has been various reports in the literature on the most effective toothbrushing method. Harnacke et al.[31] reported techniques like fones, horizontal scrub, charters and stillman as more effective toothbrushing methods, other studies reported the bass or the modified bass technique (MBT) to be more effective. [32,33] A recent systemic

review and meta-analysis also reported that modified bass technique was effective in removing plaque than the scrub tooth brushing techniques. [34] Globally, it has been reported that no particular toothbrushing technique completely removes plaque.[35] However, there seems to be a consensus agreement that the bass technique cleans the sulcus and subgingival areas.[36] Majority of the participants changed their toothbrush every three months, which is not unexpected but nevertheless commendable and compares well to a previous study.[29] It has been documented that toothbrushes become frayed after 3 months of usage, as the tooth brushes become old. [40]

Interdental cleaning has been recommended as a supportive aid to toothbrushing to reduce dental plaque accumulation interproximally thereby improving oral health.[41,42] Among the interdental cleaning aids, dental floss is the most recommended, although others include interdental brushes and toothpick. Majority of the participants used dental floss as interdental cleaning aid; this follows the trend of previous study,[43] this may be as a result of the enlightenment among the participants, about the interdental space being the highest site for bacterial stagnation and anecdotal reports of dental floss being more available compared to interdental brushes in the Nigerian market.

In this present study, dental care was accessed by the dental auxiliaries in the preceding 12 months. It was encouraging though not surprising to observe majority of the participants visiting the dentists in the preceding 12 months. Although, the main reason for their dental visits was for scaling and polishing, the proportion is still less than the optimal for the dental auxiliaries. This finding is similar to the previous study by Azodo et al.[10] but in contrast to previous studies conducted among Nigerian University students, [44] patients attending a tertiary health institution [45] and among adults in a community outreach, [46] in which pain was the main reason for the dental visits. However, few of the participants had scaling and polishing over the preceding 12 months, which shows that the participants still need further motivation. A good number of the participants, especially the dental nurses and dental therapists, had dental treatment in the current hospital of practice, while the technologists are the least to have received dental treatment in the current hospital. The reason for this, could be that the dental nurses and dental therapists are clinical dental auxiliaries, who work with the dentists and can easily approach the dentist for treatment, while the technologists are non- clinical and do not work directly with the dentist. Also, those who did not receive treatment, claimed they had no dental complaint nor had time for dental checkup/treatment. A large number of the dental nurses and dental technicians, compared to other cadres, had invited their relatives, especially their immediate family, for routine dental check-up and scaling and polishing. This may be due to the fact that the dental nurses interface between the dentists and various patients with different disease conditions, compared with the dental therapists, that attend to a particular set of patients, hence, the dental nurses invited their immediate family for preventive oral and systemic care. The families of the participants are an extension of the larger society and so this observation underscores the role of dental auxiliaries in oral health promotion. The reasons giving by the dental auxiliaries for not inviting their relatives are similar to the factors listed as part of the reasons for dental fear and anxiety (DFA) among individuals. [47] The findings in this present study are in agreement with the study by Armfield [48] which reported that people with dental fear tend to visit the dental clinic on a problem-oriented basis rather than for regular checkups, hence an intensive dental education is essential to enlighten the general population about the benefit of regular dental check-up.

Limitations of the study include that the selection of the centres was based on non-probability sampling method and so the results should be interpreted with caution as findings may not be generalized to all dental auxiliaries. The reason why the participants didn't engage in twice daily toothbrushing was also not ascertained. Nevertheless, the study has provided an important perspective on the oral hygiene behavior of dental auxiliaries in Nigeria. A future direction of this study would be to study a more representative sample of dental auxiliaries from the six geopolitical zone in Nigeria.

CONCLUSION

The oral hygiene practices and utilization of dental services by the dental auxiliaries in the study were generally less than optimal. There was a disparity between the self-rated oral hygiene status and oral hygiene practices of the dental auxiliaries.

RECOMMENDATION

The dental auxiliaries should be better motivated about the importance and benefit of maintaining good oral hygiene behavior, by regular oral health education.

Source of Support

Nil.

Conflict of Interest
None declared

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