

Periodontal Disease Knowledge and Oral Hygiene Practices of Dental and General Nursing Students in a Tertiary Hospital in South-West, Nigeria

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ABSTRACT

Objective: To assess the periodontal disease knowledge and oral hygiene practices of nursing students.

Methods: A cross-sectional study was conducted among dental & general nursing students from the Lagos University Teaching Hospital (LUTH) using self-administered questionnaires. The pre-tested questionnaire elicited information on socio-demographic characteristics, knowledge of periodontal disease, oral self-care and dental attendance practices. Data analysis was done using IBM SPSS version 23. Test for significance was done using chi-square statistics or Fisher's exact test.

Results: The dental nursing students (97.8%) displayed better knowledge of periodontal disease compared to the general nursing students (66.7%). Only half (50.8%) of the nursing students demonstrated satisfactory self-oral hygiene practices and this was much less in the general nursing students (43.2%) than the dental nursing students (82.6%). Dental nursing students had better utilization of dental floss (71.3%) than general nursing students (29.6%). The roll and bass techniques were better utilized by dental nursing students (26.1% and 6.5%) respectively than the general nursing students (6.6% and 1.1%). Utilization of dental services and scaling and polishing treatment were poorer among the general nursing students (38%, 34.3%) than the dental nursing students (91.3%, 66.7%) respectively.

Conclusion: Knowledge of periodontal disease was inadequate among the nursing students of LUTH, though better among the dental nursing students. Oral hygiene practices were unsatisfactory, although compliance was better among dental nursing students. Recommended bass/roll brushing techniques were underutilized by both groups of nursing students while underutilization of dental floss was among the general nursing students. The findings highlight the need to include basic periodontal disease topics in the curriculum of general nursing students and constantly reinforce the need for good oral hygiene behaviour among nursing students in order to position them as change agents for periodontal health for patients under their care and community at large.

Keywords: Knowledge, periodontal disease, oral hygiene, nursing students.

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CLINICAL IMPLICATIONS

Nurses are paramedical professionals and team members in the provision of dental care services. This research focuses on their trainees (nursing students) by assessing their Periodontal disease knowledge and oral hygiene practices. This will act as a guide in determining the soundness of information they disseminate to patients since they are often the first and last point of contact with the patients.

INTRODUCTION

Periodontal disease is a complex multifactorial disease, involving an intricate interplay between subgingival microorganisms in dental biofilm, host immune and inflammatory responses, and environmental modifying factors such as diabetes, smoking, poor nutrition and stress.¹⁻⁴ Periodontal disease contributes to the global burden of chronic diseases and comprise mainly gingivitis and periodontitis.⁵ Severe periodontitis which is a major cause of tooth loss in adults affects 11.2%.⁶ In Nigeria gingivitis affects 75% of the adult population while periodontitis affects 15-58%⁷⁻⁹ and is therefore a major public health problem. Thus, it increases the risk of edentulism, masticatory dysfunction (diet) nutrition, quality of life and self-esteem.⁶ Recent body of scientific evidence supports an increasing link between periodontitis and several chronic systemic diseases such as stroke, cardiovascular disease, premature births and poor glycemic control.¹⁰

Prevention of periodontal disease is important in achieving good oral health.² Good oral hygiene is considered the mainstay of periodontal health and can be achieved by combining good personal oral hygiene and regular professional dental care.^{2,6} Such measures include twice daily tooth brushing with fluoridated toothpaste and daily dental flossing.¹¹ Promotion of healthy lifestyles at both population and individual levels has also been highlighted as measures aiding good periodontal health.¹⁰

Paradental staff including nurses and nursing students have a vital role in promoting periodontal health as they are often among the first to come in contact with patients while providing health services. They assist in disseminating information on prevention, which makes it imperative for them to possess good oral health knowledge and oral health behavior.¹² Studies among healthcare professionals such as resident doctors in Nigeria found inadequate periodontal disease knowledge and unsatisfactory oral self-care practices.^{13,14} Poor knowledge about oral health has been reported among nurses in

Nigeria.¹⁵ Nursing students have also been reported to have poor recall dental visits.¹⁶

The grossly inadequate oral health manpower in Nigeria compared to more developed countries,¹⁷ underscores the need to engage nursing students in the promotion of periodontal health. How well they can function in this capacity depends on their basic knowledge of periodontal disease and their oral hygiene practices as people are more likely to teach what they practice and have knowledge about. The present study was therefore aimed at assessing the periodontal disease knowledge and oral health practices among dental and general nursing students of the Lagos University Teaching Hospital.

MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted among dental nursing students (DNS) and general nursing students (GNS) of the Lagos University Teaching Hospital (LUTH). Data collection was obtained through a self-administered questionnaire. The pre-tested questionnaires were hand delivered and the completed questionnaires were returned to the researcher. Informed consent forms were duly completed and signed by willing participants.

The questionnaire was used to elicit information on participants' socio-demographic characteristics, knowledge of periodontal disease, source of information of periodontal disease, oral self-care oral hygiene practices and utilization of dental services. Data analysis was performed using IBM SPSS version 23.0, for frequency, distribution and cross tabulations. Test for significance was done using chi-square statistics or Fisher's exact test.

RESULTS

Two hundred and eighty questionnaires were distributed to 234 general nursing students (GNS) and 46 dental nursing students (DNS) of the Lagos University Teaching Hospital. The mean age of the general nursing students was 21.7 ± 4.5 years with an age range of 16-41 years, while that of the dental nursing students was 22.6 ± 3.9 years with an age range of 18-32 years. The majority of the respondents were females (85.7%). Students from the general nursing school constituted the majority (80.7%). No significant association was observed between the sociodemographic characteristics of the nursing students and their school of study ($p > 0.05$). (Table 1).

The respondents' sources of knowledge of periodontal disease varied. The general nursing

students were informed via lectures (27.6%), journals (20.3%), seminars (15.1%), colleagues (10.4%), clinical teachings (8.6%), family (7.3%), and conferences (5.7%) while the dental nursing students were informed through clinical teachings (47.8%), lectures (32.6%), colleagues (15.2%), journals (2.2%) and conferences (2.2%). The mean knowledge score for all the nursing students was 2.92 ± 1.59 . Based on the response of the participants to the knowledge of periodontal disease, the dental nursing students had a higher mean knowledge score of $4.07 (\pm 1.62)$ than the general nursing students (2.64 ± 1.45) ($p = 0.000$). (Table 2). The overall mean self-oral hygiene practice score (OHP-S) was $3.55 (\pm 1.22)$ The dental nursing students had a higher mean OHP-S (4.57 ± 1.03) than the general nursing students (3.31 ± 1.13) ($p = 0.000$). (Table 3). Periodontal knowledge was more adequate among nursing students in years one (2.63) and two (3.37) compared to year three (2.57). ($p = 0.001$). Self-oral hygiene practice score was higher among nursing students with adequate knowledge (3.81) than those with inadequate knowledge (3.41) ($p = 0.013$). Only 47.5% of all the nursing students had visited the dental clinic for checkup/treatment. However, most

42(91.3%) of the dental nursing students (DNS) had attended compared with the general nursing students (GNS) 71(37%). (Figure 1) Absence of dental problems was the only reason given by DNS for not attending the dental clinic for treatment. Reasons given by GNS for not visiting were a lack of a dental problem (43.2%), dental treatment was very expensive (7.3%), 4.2% claimed dental visit was a waste of time, 2.1% said no specialist was available and 5.2% gave other reasons. The most frequent treatment that was received by all the nurses was scaling and polishing 53(45.3%), although this was higher among the DNS 28(65.1%) than the GNS 25(36.2%). Check-ups were more in the GNS 29(42%) than the DNS 8(18.6%). (Figure 2).

Within the preceding year, a significant proportion of DNS (36)78.3% had utilized the dental services compared to the GNS (28)14.6% ($p = 0.000$). Overall, more of the DNS 29(63.0%) received scaling and polishing than the GNS 17(8.7%) in the same preceding year ($p = 0.000$). Further analysis revealed that less than half 18(39.1%) of the DNS and only 12 (6.2%) of the GNS received scaling and polishing in the preceding six months ($p = 0.000$). (Table 4).

Table 1: Socio-demographic characteristics of the participants

Variables	Dental Nursing Students N=46 (%)	General Nursing Students N=192 (%)	Total n (%)	P-value
Response Rate (%)	(100)	(82.1)		
Age (years)				
≤ 20	17 (37)	91 (52.6)	108 (45.4)	0.266
> 20	29 (63)	101 (47.4)	130 (54.6)	
Gender				
Male	7 (15.2)	27 (14.1)	34 (14.3)	1.000
Female	39 (84.8)	165 (85.9)	204 (85.7)	
Year of study				
1	18 (39.1)	65 (33.9)	83 (34.9)	0.056
2	23 (50.0)	74 (38.5)	97 (40.7)	
3	5 (10.9)	53 (27.6)	58 (24.4)	
Ethnicity				
Yoruba	29 (63.0)	118 (61.5)	147 (61.8)	0.951
Igbo	11 (23.9)	53 (27.6)	64 (26.9)	
Hausa	4 (8.7)	14 (7.3)	18 (7.6)	
Others	2 (4.4)	7 (3.7)	9 (3.8)	
Marital				
Single	38 (82.6)	153 79.7)	191 (80.3)	0.688
Married	7 (15.2)	37 (19.3)	44 (18.5)	
Others	1 (2.2)	2 (1.0)	3 (1.26)	

Table 2: Association between knowledge of periodontal disease and School of study among the participants

Correct responses to questions on periodontal diseases	Dental nursing students N (%)	General nursing students N (%)	Total N (%)	P-value
Understanding the term periodontal disease				
<i>Damage to tooth supporting tissues</i>	45 (97.8)	128 (66.7)	173 (72.7)	0.000*
Common type of periodontal disease				
<i>Gingivitis</i>	42 (91.3)	106 (55.2)	148(62.2)	0.000*
Primary cause of periodontal disease				
<i>Bacteria plaque</i>	29 (63.0)	128 (66.7)	157(66.0)	0.674
A sign of periodontal disease				
<i>Bleeding gum</i>	33 (71.7)	73 (38.0)	106(44.5)	0.000*
Common condition associated with periodontal disease				
<i>Diabetes mellitus</i>	21 (45.7)	94 (49.0)	115 (48.3)	0.054
Risk factor for periodontal disease				
<i>Cigarette smoking</i>	22 (47.8)	56 (29.2)	78 (32.8)	0.021*
Level of periodontal disease knowledge				
<i>0 – 3 (Inadequate)</i>	18 (39.1)	134 (69.8)	152(63.9)	0.000*
<i>4 – 6 (Adequate)</i>	28 (60.9)	58 (30.2)	86 (36.1)	
Total	46 (19.3)	192 (80.7)	238 (100)	

*=statistically significant

Table 3: Association between self-oral hygiene practices and school of study among the participants

Correct response to questions on self-Oral hygiene practices	Dental nursing students n (%)	General nursing students n (%)	Total n (%)	P-value
How often do you clean your teeth?				
<i>Twice daily (Morning and last thing at night)</i>	36(78.3)	97(50.5)	113(55.9)	0.008*
Which of the following do you use to clean your teeth daily? (n=236)				
<i>Toothbrush + fluoridated toothpaste</i>	42(91.3)	131(69.0)	173 (73.3)	0.045*
If you use toothbrush, what texture of bristle do you use?				
<i>Soft bristle</i>	3(6.5)	31(16.4)	34(14.5)	0.052*
<i>Medium bristle</i>	39 (84.8)	121(64.0)	160(68.1)	
Which type of brushing technique do you often use? (n=225)				
<i>Roll technique</i>	12 (26.1)	12(6.6)	24(10.5)	0.000*
<i>Bass technique</i>	3(6.5)	2(1.1)	5(2.2)	
What do you often use to clean in-between your teeth? (n=225)				
<i>Dental floss</i>	33(71.7)	53(29.6)	86(38.2)	0.000*
How often do you change your tooth brush? (n=229)				
<i>3 - 4 months</i>	41(89.1)	136(74.3)	177 (77.3)	0.089
Level of self-oral hygiene practice				
<i>0 – 3 (unsatisfactory)</i>	8(17.4)	109(56.8)	117(49.2)	0.000*
<i>4 – 6 (Satisfactory)</i>	38(82.6)	83(43.2)	121(50.8)	
Total	46(19.3)	192(80.7)	238(100.0)	

*=statistically significant

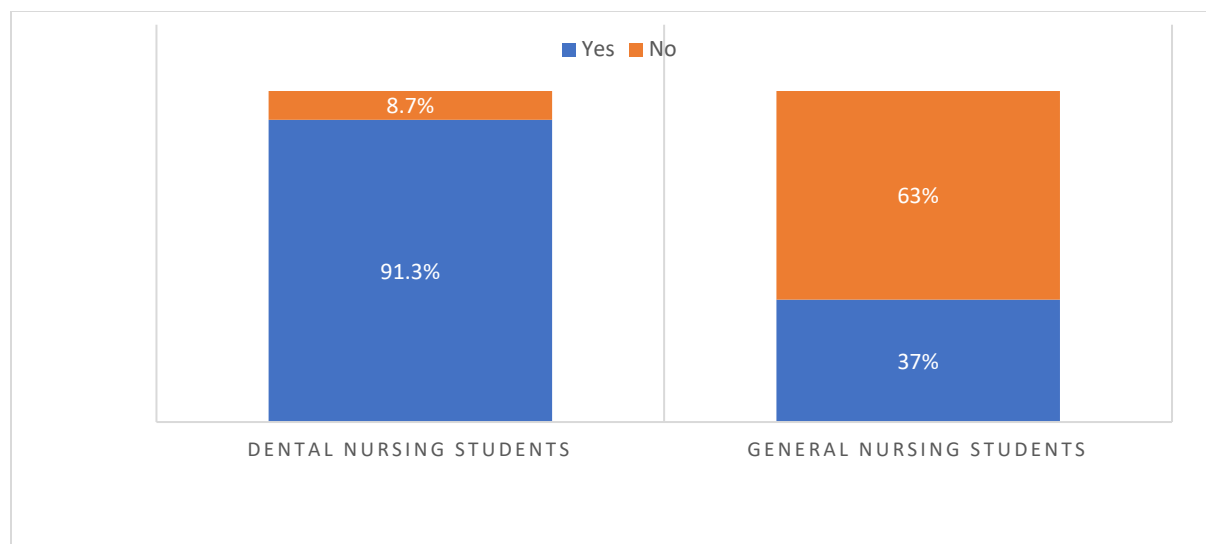


Figure 1: History of previous dental visit among the participants

Table 4: Pattern of professional oral prophylaxis among the participants

Variable	Dental nursing students n (%)	General nursing students n (%)	Total n (%)	P-value
Utilization of dental services in preceding year				
Yes	36(78.3)	28(14.6)	64(26.9)	0.000*
No	10(21.7)	164(85.4)	174(73.1)	
Scaling and Polishing in preceding year				
Yes	29(63.0)	17(8.9)	46(19.3)	0.000*
No	17(37.0)	175(91.1)	192(80.7)	
Scaling and Polishing in preceding six months				
Yes	18(39.1)	12(6.2)	30(12.6)	0.000*
No	28(60.9)	180(93.8)	208(87.4)	

*=statistically significant

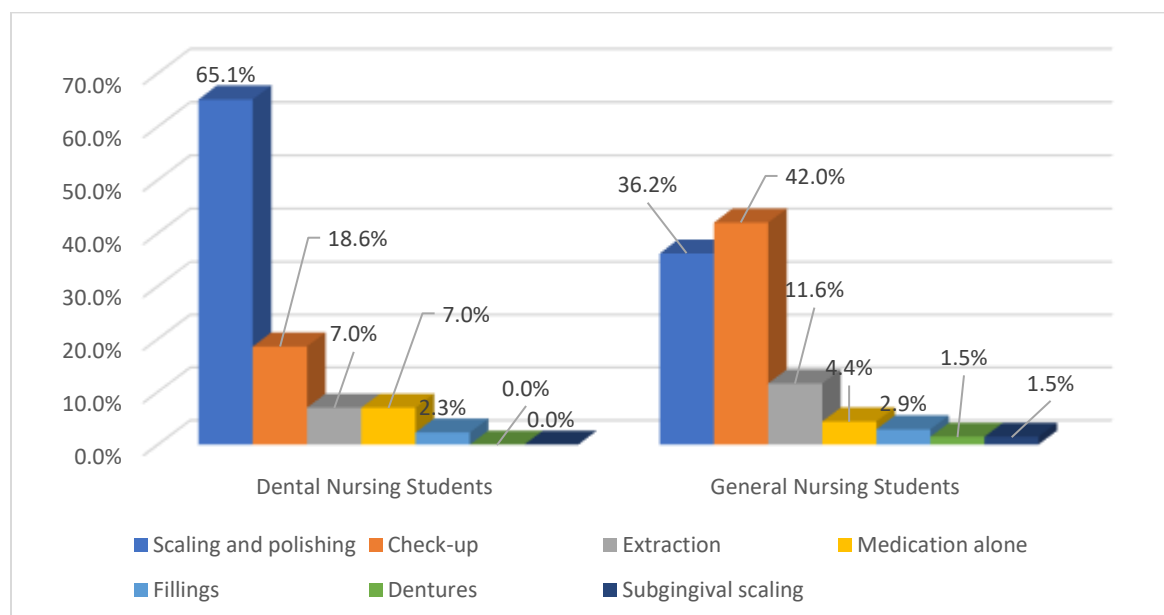


Figure 2: Distribution of dental treatments received by the participants

DISCUSSION

Dental care of patients requires a team approach where every member plays a vital role, nurses interact longer and assist in providing health information to their medical and dental patients, which can also benefit family members, friends and dwellers of their community. Oral health care is incorporated in the curriculum of nursing students and so they are expected to possess adequate knowledge to render this service when required to do. Moreover, the shortage of health care manpower in developing countries like Nigeria,¹⁸ suggests the need for other health professionals to be involved in oral health promotion.

The present study was conducted to assess the periodontal disease knowledge and oral hygiene behavior of nursing trainees of the Lagos University Teaching Hospital in order to determine the extent of their conformity with the standards of periodontal health. This is important because following their graduation, the very nature of their profession, makes them to be involved early in the care of patients which makes them valuable champions in periodontal health promotion.

From the present study, we can deduce that overall; majority (63.9%) of the nursing students had inadequate knowledge of periodontal disease. Regarding their self-oral hygiene practices, only 50.8% of the nursing students demonstrated satisfactory self-oral hygiene practices. This is not encouraging because nursing students are in an academic and hospital environment where clinical knowledge is shared consistently on different forum. This is equally similar to the study among nursing students in Denmark where insufficient knowledge of gingivitis and periodontitis was observed.¹⁹ A recent study among Nigerian undergraduates also observed inappropriate knowledge of periodontal disease.²⁰ In Nigeria, the awareness of periodontal disease has been reported to be low in different population groups such as patients,²¹ health professionals,¹³ and non-medical professionals.²²

Despite the overall unsatisfactory knowledge of periodontal disease (63.9%) and self-oral hygiene practices among nursing students, dental nursing students (DNS) exhibited better performance (60.9% for knowledge and 82.6% for OHP-S) compared to the general nursing students (GNS) (30.2% and 43.2%). This is however not unexpected considering their regular encounter with patients with periodontal disease in the clinic, chair side teachings and lectures they have received. This was corroborated by their two most frequent sources of

information being clinical teachings (47.8%) and lectures (32.6%). This further buttress the importance of clinical exposure in enhancing knowledge. Clinical exposure in form of short posting would also be of tremendous benefit to GNS. The findings are similar to that reported among pharmacy and nursing students in a University in Nigeria which also observed inadequate knowledge of oral health.²³

The study also reported poor knowledge of the association between diabetes and periodontal disease. This was quite revealing, considering the large proportion of Nigerians affected by diabetes,²⁴ and the adverse effect of untreated severe periodontal disease on glycemic control.²⁵ The GNS particularly encounter medical patients on the ward and this deficient knowledge may limit their ability to educate such patients on periodontal disease and preventive measures. Smoking has been reported as a major risk factor for severe periodontal disease.²⁶ The knowledge of smoking as a risk factor was inadequate (29.2% and 47.8%) among the GNS and DNS respectively. This was much higher than the 2.2% reported among dental patients and their escorts attending dental clinics, in the study by Nwhator et al.²⁷ The difference may be attributed to the medical knowledge acquired overtime by the nursing students. Poor knowledge of gingival bleeding as a common sign of periodontal disease was also observed in the present study. These are important areas that need emphasis in their course content and clinic sessions as gum bleeding is among the earliest features of periodontal disease.

Most of the self and professional oral hygiene care was better performed by the DNS than the GNS. Bashiru et al.²³ also concluded in their study that oral health practices among pharmacy and nursing students in a Nigerian university needed some improvement. The constant reinforcement of the self-oral hygiene practices by DNS to their dental patients may have impacted their own oral hygiene behavior as well.

The low use of dental floss and roll/bass brushing technique among GNS in this study is in keeping with what was reported among Nigerians in an earlier study.²² There is therefore need for better awareness of using proper interdental cleaning aids and brushing techniques among GNS so they can disseminate correct information to their patients, family members and community at large.

The higher scaling and polishing (prophylaxis) received by the DNS is expected as they are always in the dental clinic environment and watching these

procedures performed regularly might have motivated them as well to maintain a good oral hygiene. Besides, they frequently provide oral hygiene instructions to patients.

The association between the knowledge of periodontal disease and self-oral hygiene practice score in the present study was not unexpected as studies have linked increased knowledge of oral health with better oral hygiene practices.^{28,29} This buttresses the need to improve periodontal disease awareness using more graphical teaching aids to reinforce good oral hygiene behavior among nursing students.

A limitation of the present study is the self-reported data collection tool which may have recall bias from the respondents. Nevertheless, the study has provided insight into the periodontal disease knowledge of dental and general nursing trainees to assess their preparedness to be promoters of periodontal health.

CONCLUSION

Overall, knowledge of periodontal disease was inadequate among the nursing students, though much better among dental nursing students. Knowledge on the signs of periodontal disease, associated medical condition and risk factors was deficient. Oral hygiene practices were unsatisfactory, although compliance was better among dental nursing students. Self-oral hygiene practices such as dental floss and recommended roll/bass tooth brushing techniques were underutilized.

RECOMMENDATION

There is a need to emphasize basic periodontal disease topics in the course content of nursing students to improve their periodontal disease knowledge base, particularly that of general nursing students. Clinical exposure in dentistry should be a component of their training to enhance their periodontal disease and general oral health knowledge and oral hygiene practices. This will go a long way in preparing them for their communities (rural and primary health care centers), promotion of good oral and periodontal health and giving appropriate advice and prompt referral when needed.

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Conflict of interest

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