

## Awareness of dental diseases and oral health behaviour among dental and medical students of a Nigerian university

### Wiedza o chorobach stomatologicznych i zachowaniu prozdrowotnym jamy ustnej wśród studentów stomatologii i medycyny z Uniwersytetu Ibadan, Nigeria

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#### Abstract

**Aim of the study.** To assess the effects of change in curriculum on the oral health knowledge and behaviour among the third and fourth year medical and dental students, and their use of dental services. **Methods.** A self-administered questionnaire was used to assess, among other things, the knowledge of respondents of dental diseases and possible risk factors. **Results.** Two hundred and thirty-seven respondents filled and returned the questionnaires, out of which 125 (52.7%) were females (with male:female ratio of 1:1.1). About 50% of the respondents were in 300 levels, consisting of 99 (82.5%) medical students. A higher percentage of 300 level medical students have better knowledge of diseases such as pulpitis, oral cancer and scurvy as possibly occurring within the mouth than their 400 level counterparts. **Conclusions.** There is a need not only to integrate dentistry into the curriculum of medical students, but also to re-assess constantly the impact of such on the quality of output from various medical schools.

#### Streszczenie

**Cel pracy.** Ocena wpływu zmiany programu nauczania na wiedzę o zdrowiu jamy ustnej i zachowania prozdrowotne wśród studentów trzeciego i czwartego roku wydziałów lekarskich i dentystycznych, jak również korzystanie przez nich z opieki stomatologicznej. **Metody.** Posłużono się kwestionariuszem przygotowanym na potrzeby tego badania w celu oceny, między innymi, wiedzy respondentów o chorobach zębów i możliwych czynnikach ryzyka. **Wyniki.** Dwustu trzydziestu siedmiu studentów wypełniło i oddało ankiety, z których sto dwadzieścia pięć (52.7%) to kobiety (w stosunku 1:1.1 mężczyzn do kobiet). Około 50% respondentów z poziomu 300 to 99 (82.5%) studentów z wydziałów lekarskich. Wyższy odsetek studentów wydziałów lekarskich z poziomu 300 może mieć lepszą wiedzę o chorobach, takich jak zapalenie miazgi, nowotwory jamy ustnej i szkorbut niż ich rówieśnicy z poziomu 400. **Wniosek.** Nie tylko istnieje potrzeba wprowadzania stomatologii do programów nauczania wydziałów lekarskich, ale należy również nieustannie oceniać wpływ takiej zmiany na jakość wyników nauczania w różnych uczelniach medycznych.

#### KEYWORDS:

knowledge, dental diseases, oral health behaviour, service utilization

#### HASŁA INDEKSOWE:

wiedza, choroby zębów, zachowanie prozdrowotne jamy ustnej, korzystanie z usług

## **Introduction**

A significant number of patients with dental complaint still find themselves first at the medical emergency room before eventually getting to see a dentist, whom they should have seen in the first place.<sup>1,2</sup> This, therefore, calls for the medical practitioner to be well prepared as to what to do when such cases present to them. There may be a need for prescribing medication as a stop-gap measure before appropriate referral takes place. A medical doctor who lacks good knowledge of dental disease and/or dental specialties, will most likely fail in recognizing an 'obvious' dental disease, and might not be able to refer appropriately.<sup>3-6</sup> Good knowledge of dental diseases among medical and dental students is likely to translate into a better knowledge of the diseases, when such students graduate from the medical school and are thus likely to be a better practitioner than those that lack such an in-depth knowledge.<sup>7,8</sup>

Utilization of this knowledge is likely to lead to enhancement of preventive oral health care by both medical and dental practitioners, as they can effectively counsel their patients. For example, a significant reduction in the severity and prevalence of oral disease has been witnessed in the past fifty years among the population of the developed countries, which is traceable to the utilization of preventive oral health care.<sup>9-11</sup> Oral health care program targeted at the improvement of dental care utilization was organized in some instances, with the attendant improvement in visitation. This has resulted in improved dental health and positive change in the pattern of dental caries among the studied population, which will eventually result in more people being able to keep their natural dentition functional into an older age.<sup>10-13</sup>

Oral health is considered an essential prerequisite for health-related behaviour, although studies have shown that there is an association between awareness of oral health and its improvement.<sup>13,14</sup> Clinical medical and dental students play a significant role in passing on information on preventive health and health promotion; it is, therefore, important that they have sound knowledge of oral health, which conforms to professional recommendations.<sup>14</sup> These groups

of clinical students in their course of study come across a great number of patients of different age groups and backgrounds, hence they should have an adequate knowledge of dental diseases so that they can be role models to the society at large. It is also important that these clinical students should modify their attitude and behaviour towards their own oral health because they (especially the dental students) will provide dental services in the future and will be responsible for public oral health education. Therefore, the present study aims at assessing the oral health awareness and behaviour among the third and fourth year medical and dental students, and the utilization of dental services among them.

## **Material and Methods**

This was a cross-sectional study of medical and dental students in their 3<sup>rd</sup> and 4<sup>th</sup> year in the medical school. The 3<sup>rd</sup> year students had just finished their Part 1 MBBS and BDS examinations in the pre-clinical courses and were just starting their clinical rotations. At the time of collecting the data, they were receiving introductory lectures on dentistry as part of the series of general introductory lectures. The 4<sup>th</sup> year medical students that participated in the study were on a special rotation through dentistry for two weeks, while their dental counterparts had just finished the skill-acquisition laboratory, where they worked on phantom head in preparation for clinical training in dentistry. The two sets of students are peculiar in that the 3<sup>rd</sup> year students were the first set of the new curriculum for training clinical dental and medical students, while the 4<sup>th</sup> year students were the last set to be trained on the old curriculum. The new curriculum is expected to provide a better exposure of medical and dental students to all aspects of medical practice, including dentistry, right from the pre-clinical phase of their training, unlike the previous sets to which the 4<sup>th</sup> year students belong, and who were exposed to dentistry for only two weeks during their clinical rotations.

Participation in the study was voluntary and all participants were queried anonymously. Students were requested to remain in the classroom after the lecture to fill in a self-administered questionnaire,

**Table 1.** Socio-demographic status of participants

Socio-demographic status		Number of respondents (%)	
Sex	Male	300 Level	53 (22.3)
		400 Level	59 (24.9)
	Female	300 Level	67 (28.3)
		400 Level	58 (24.5)
Course of study	MBBS	189 (79.7)	
	BDS	48 (20.3)	
Year of study	300 Level	120 (50.6)	
	400 Level	117 (49.4)	
Marital status	Single	232 (97.9)	
	Married	5 (2.1)	
Cigarette smoking	Yes	3 (1.3)	
	No	234 (98.7)	

MBBS – Medical students, BDS – Dental students.

which consisted of five parts. Part A included questions on socio-demographic status, parts B and C on knowledge and risk factors of dental diseases, Part D on dental service utilization and the last part on oral health behaviour. Part B was based on the ability of respondents to identify basic dental diseases such as caries, pulpitis, gingivitis, periodontitis and fluorosis among others. Part C was supposed to assess respondent's knowledge of how factors such as cigarette smoking, cola nut chewing, exposure to sunlight, uncontrolled diabetes mellitus and age could predispose to dental disease.

The collected data was entered into a computer and analysed using the SPSS version 19.0. Continuous variables such as age were summarized using descriptive statistics of mean and standard deviation, while simple frequencies were determined for all other variables. Statistical significance was based on probability value of less than 0.05.

## Results

Two hundred and thirty-seven correctly filled questionnaires out of the two hundred and fifty questionnaires sent out were analyzed. Participants' age ranged from 19 to 30 years with a mean of  $21.5 \pm 2.2$  (SD). One hundred and twenty-five (52.7%) were females, and the remaining 112 (47.3%) were males giving a male to female ratio of 1:1.1. About half (50.6%) of the participants were 300 level students out of which 99 (82.5%) were medical students and the remaining 21 (17.5%) were dental students. Almost all the participants were single and did not smoke (Tab. 1).

Table 2 reveals that the third year medical students were more knowledgeable of most of the dental diseases – except fluorosis – than their 400 level counterparts. However, the fourth year dental students had better knowledge of dental diseases than their third year counterparts.

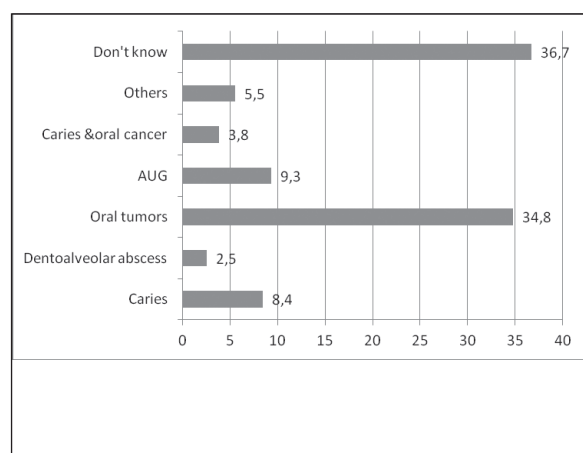
Considering the risk factors, almost all the respondents knew that poor oral hygiene (97.9%)

**Table 2.** Knowledge of dental diseases among respondents

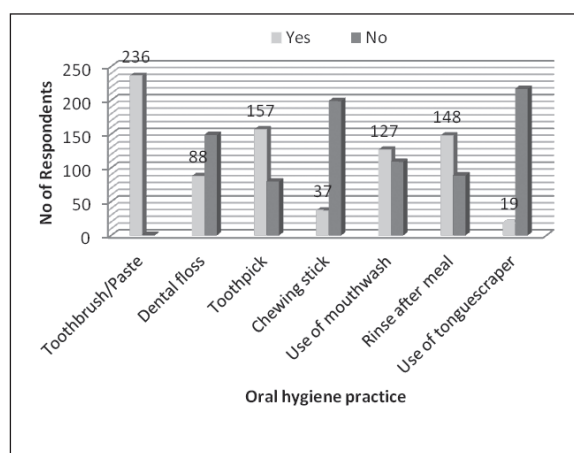
Dental disease	Course of study	Year of study	Yes (%)	No (%)	I don't know (%)
Dental caries	MBBS	300 Level	97 (98.0)	1 (1.0)	1 (1.0)
		400 Level	90 (100)	–	–
	BDS	300 Level	21 (100)	–	–
		400 Level	27 (100)	–	–
Pulpitis	MBBS	300 Level	67 (67.7)	10 (10.1)	22 (22.2)
		400 Level	59 (65.6)	10 (11.1)	21 (23.3)
	BDS	300 Level	17 (81.0)	2 (9.5)	2 (9.5)
		400 Level	27 (100)	–	–
Periodontitis	MBBS	300 Level	94 (95.0)	2(2.0)	3(3.0)
		400 Level	86 (95.6)	2(2.2)	2(2.2)
	BDS	300 Level	21(100)	–	–
		400 Level	27(100)	–	–
Oral cancer	MBBS	300 Level	96(97.0)	1 (1.0)	2(2.0)
		400 Level	83(92.2)	4(4.4)	3(3.3)
	BDS	300 Level	21(100)	–	–
		400 Level	27(100)	–	–
Scurvy	MBBS	300 Level	60(60.6)	27(27.3)	12(12.1)
		400 Level	52(57.8)	28(31.1)	10(11.1)
	BDS	300 Level	8(38.1)	9(42.9)	4(19.0)
		400 Level	9(33.3)	16(59.3)	2(7.4)
Rickets	MBBS	300 Level	18(18.2)	65(65.7)	16(16.2)
		400 Level	29(32.2)	41(45.6)	20(22.2)
	BDS	300 Level	4(19.05)	13(61.9)	4(19.05)
		400 Level	8(29.6)	18(66.7)	1(3.7)
Fluorosis	MBBS	300 Level	55(55.6)	5(5.0)	39(39.4)
		400 Level	83(92.2)	3(3.3)	4(4.4)
	BDS	300 Level	17(81)	1(4.8)	3(14.3)
		400 Level	26(96.3)	1(3.7)	–

**Table 3.** Knowledge of risk factors of dental disease among respondents

Risk factors	MBBS(Medical students)			BDS(Dental students)		
	Yes	No	Don't Know	Yes	No	Don't Know
Cola nut	111	25	53	33	6	9 ( $\chi^2=1.91, p=0.385$ )
Cigarette smoking	175	6	8	48	—	— ( $\chi^2=3.7, p=0.15$ )
Age	144	16	29	32	11	5 ( $\chi^2=8.13, p=0.017$ )
Diabetes Mellitus	122	12	55	36	5	7 ( $\chi^2=4.59, p=0.10$ )
Refined Carbohydrate	138	11	40	38	4	6 ( $\chi^2=4.59, p=0.36$ )
Poor Oral hygiene	186	—	3	46	—	2 ( $\chi^2=1.23, p=0.27$ )
Sunlight	13	118	58	3	33	12 ( $\chi^2=0.68, p=0.71$ )
Alcohol	114	27	48	37	7	4 ( $\chi^2=1.82, p=0.03$ )
Marijuana	120	16	53	35	2	11 ( $\chi^2=2.6, p=0.28$ )
Tobacco dipping	150	7	32	42	—	6 ( $\chi^2=2.6, p=0.28$ )



**Fig. 1.** Respondents knowledge of dental diseases that can kill. Others include – pulpitis, periodontitis, oral ulceration, osteomyelitis. AUG – Acute Ulcerative Gingivitis



**Fig. 2.** Oral Hygiene Practice of Participants

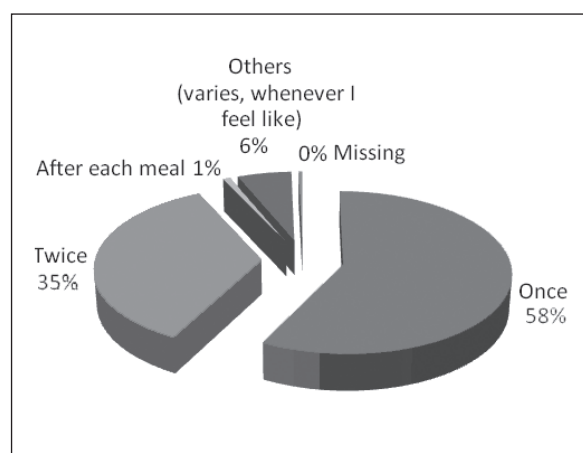
**Table 4.** Dental service utilization among participants

		Number (%)
Previous dental visit	Yes	100 (42.2)
	No	137 (57.8)
	Total	237 (100)
Last dental visit	< 6 months ago	31 (13.1)
	> 6 months ago	15 (6.3)
	> a year ago	37 (15.6)
	I cannot remember	17 (7.2)
	Total	100 (100)
Reasons for dental visit	Toothache	23 (9.7)
	Gum bleeding	5 (2.1)
	Hole in the tooth/teeth	23 (9.7)
	Mouth odour	1 (0.4)
	Others (ulceration, routine check-up, S&P)	48 (20.3)
	Total	100 (100)
Reasons for not visiting	I have no dental problem	70 (29.5)
	High cost of treatment	15 (6.3)
	Lack of access to dental clinic	6 (2.5)
	Lack of time	12 (5.1)
	Others	34 (14.3)
	Total	137 (100)

and cigarette smoking (94.1%) are risk factors for dental diseases. Majority of the medical (76.2%) and dental (66.7%) students agreed that age is a risk factor for dental diseases, which was statistically significant ( $p=0.017$ ). Majority of the respondents also agreed that alcohol is a risk factor for dental disease, which was also statistically significant ( $p=0.03$ ). About 63% of the respondents believed that prolonged exposure to sunlight is not a risk factor for development of any dental disease such as oral tumours, either benign or malignant, while 30% did not even know that sunlight was a risk

factor for some dental diseases (Tab. 3). Slightly over a third (36.7%) of the respondents did not know of any dental disease that can lead to death, while another one-third (34.8%) knew that oral tumours can kill (Fig. 1).

More than half (57.4%) of the respondents had never visited a dentist before the study while only 13.1% of those with history of previous consultation with a dentist did so within the past six months and the reasons given by about one-fifth (20.3%) were mainly for routine check-up and ulcerations, closely followed by toothache and



**Fig. 3.** Frequency of tooth brushing by respondents

cavities (9.7% each). Almost the same proportion of males and females do not visit a dentist unless there is pain, many (31.4%) of those who had never visited a dentist before believed that they had no reason or problem requiring dental consultation (Tab. 4). Almost all (99.6%) of the participants used a toothbrush and fluoridated toothpaste with no gender preponderance, but only 54%, 37% and 8% used mouthwash, dental floss and a tongue scraper, respectively (Fig. 2). Over half (58%) of the respondents brush once daily, while only 35% brush twice a day, of which 54% were dental students (Fig. 3).

## Discussion

The overall knowledge of oral health of the 3<sup>rd</sup> year medical students was better than that of the 4<sup>th</sup> year students in this present study, and this could be due to the fact that the third year students are the first set of the newly revised curriculum, in which students are introduced earlier into dentistry. They received lectures in all different specialties and also underwent clinical rotations in batches, unlike the 4<sup>th</sup> year students who were the last set of the old curriculum and were only exposed to two weeks of block posting in dentistry with little or no clinical exposure in dentistry. The increased oral health awareness of these third year students demonstrates the essence of better and improved

knowledge impacted with the new curriculum. The 4<sup>th</sup> year dental students, on the other hand, were more knowledgeable than their 3<sup>rd</sup> year counterparts because they had been exposed to twelve weeks of lectures in operative techniques, prosthetics and technology of dental materials, and had just started their clinical rotations. This finding was in agreement with a previous study by *Sharda and Shetty*<sup>15</sup> who reported a significantly higher mean score of oral health knowledge, attitude and behaviour among final year students compared to the first year, and the difference observed reflects the variation in the students' educational level.

In the present study, the majority of students believed that age was a risk factor for dental diseases, which was statistically significant. Earlier studies have corroborated these findings with an increased prevalence and severity of periodontal diseases observed among the elderly. However, other reports suggested that the increased prevalence of periodontal disease among the elderly is not necessarily due to the increased rate of periodontal tissue destruction as a result of aging, rather it is said to be due to cumulative periodontal tissue destruction over time.<sup>16-19</sup> Although there is still controversy as to whether periodontal diseases increase with age or not, dental caries is reportedly commoner among younger age groups, with increasing incidence from shortly after eruption until the late teens.<sup>20</sup> Therefore, there must have been a misconception among the students who wrongly agreed that increasing age is a risk factor for dental diseases, and this calls for re-orientation. This misconception could possibly have stemmed from the fact that many diseases are generally believed to be commoner with aging. Most of the respondents also considered cigarette smoking and alcohol consumption to be risk factors for dental diseases, which is in line with the widely held belief that these factors may predispose to oral cancer.<sup>19</sup>

Oral health knowledge is expected to be good among clinical students since it is an important segment in their professional education as they require this knowledge to educate the patients and the community when they begin working in the health care system.<sup>21</sup> It is, however, surprising that



about a third do not know of any dental disease that can lead to death. Medical and dental students need to be taught in preclinical classes of possible consequences of dental diseases which, if left untreated, can be fatal. The awareness of the risk factors for development of dental diseases will go a long way in preventing their occurrence. Preventive measures such as educating the community on the risk factors for dental diseases are highly recommended. The health beliefs and attitude of these students are important because they are future health care providers, and their attitudes not only affect their personal oral care but also can potentially influence their ability to take care of their teeth<sup>22-24</sup> and shape the public oral health education level.<sup>25</sup> Dental health care providers should set an example for their patients, family and friends by maintaining good personal oral health.<sup>15</sup>

The number (57.4%) of respondents who had never visited a dentist is far higher in this study than the 28.6% and 15.3% reported among first and final year dental students in a previous study in India.<sup>15</sup> This could be due to low awareness of dentistry and dental care among the population of which the dental students are a part. The percentage (20.3%) of those visiting the dentists was higher for other reasons such as routine check-ups, scaling and polishing, ulcerations etc, and more females were involved among the medical and dental students. However, this is low compared with 43.9% and 19.8% reported among the final and first year students by *Sharda* and *Shetty*.<sup>15</sup> The fact that more females in this study had visited a dentist before could be due to the fact that females tend to be more conscious of their appearance and care more for their bodies than males; they would be more concerned about visiting a dentist and would tend to be more educated about their dentition even before entering a course related to dentistry.<sup>25</sup>

In the present study, about 10% of the respondents visit the dentist only when there is pain, and this figure is lower than that reported in a previous study among Indian students,<sup>15</sup> where

30.2% of the first year dental students and 23.6% of final year students put off going to see a dentist unless they felt pain. This is different from the results obtained by some other studies<sup>26,28</sup> where more females reported visiting the dentist due to toothache, unlike in the study by *Sharda et al.* where more males reported that they visited the dentist only when they had toothache.<sup>15</sup>

The use of a toothbrush with fluoridated toothpaste is widely accepted with 99.6% of respondents involved with no gender preponderance. In previous studies,<sup>28,29</sup> however, females believed in the necessity of using toothpaste during brushing more often than their male counterparts did. In the present study, slightly more females brush twice daily, out of which more than a half were dental students. This is similar to the findings of previous studies,<sup>28,29</sup> where women reported significantly higher frequencies of toothbrushing compared with men. In the study by *Sharda & Shetty*<sup>15</sup> and *Tseveenjav et al.*<sup>30</sup> on the other hand there was no significant difference in brushing behaviour of males and females. The activity of tongue cleaning was quite low (8%) in this study compared with 87.4% of the first and 93% of the final year students, while a higher percentage reported using mouthwash and dental floss in our study compared with lower values reported among dental students in India.<sup>15</sup>

## Conclusion

The fact that some of the 300 Level medical students seem to have a better knowledge of dental diseases than their 400 Level counterparts might suggest that the newly introduced curriculum is superior in exposing medical students to dental specialties. However, this assumption might be slightly premature at this point when the first set of students undergoing the new curriculum are yet to graduate. There is, therefore, the need for a re-assessment in order to be able to fully appreciate the effect of the change in the curriculum by the medical school concerned.



Appendix: QUESTIONNAIRE

Knowledge of dental diseases among medical students

This questionnaire is to assess the knowledge of university students concerning their knowledge of dental diseases. The information you provide will be treated with strict confidence. I will be glad if you can kindly fill it. Thank you. Dr IMF Abiodun-Solanke.

A. Sociodemographic

Serial Number: -----

- 1. Age: ----- 2. Sex:..... 3. Occupation .....
- 4. Course of study (For Students)..... 5. Year of study.....
- 6. Highest educational level..... 7. Marital status.....
- 8. Do you smoke cigarettes? Yes..... No.....

B. Knowledge of dental disease

9. Which of the following do you consider as one of the dental diseases?

Dental disease	Yes	No	I don't know
a. Caries			
b. Pulpitis			
c. Gingivitis			
d. Periodontitis			
e. Oral cancer			
f. Scurvy			
g. Ricket			
h. Fluorosis			

C. Risk factors for dental disease

10. Which of the following do you consider to be one of the risk factors for dental disease/dental cancer?

Risk factors	Yes	No	I don't know
a. Cola nut			
b. Cigarette smoking			
c. Age			
d. Diabetes Mellitus			
e. Refined carbohydrate			
f. Poor oral hygiene			
g. Sunlight			
h. Alcohol			
i. Marijuana			
j. Tobacco dipping			

D. Dental Services Utilisation

- 11. Have you ever visited a dentist before? Yes..... No ..... (if no, go to question 14)
- 12. If Yes, when was the last time you visited? a) <6 months ago b) >6 months but within a year ago c) > 1 year d) I can't remember again
- 13. What was your reason for visiting a dentist on your last visit? a) Toothache/pain b) Gum bleeding c) Hole in my tooth/teeth d) Mouth odour e) Others (specify).....
- 14. If you have never visited a dentist before, why have you not done so? a) I believe that I have no dental problem b) high cost of treatment c) I don't have access to any dental clinic (distance) d) I don't have the time for it e. Others (pls specify).....

E. Knowledge of possible consequences of dental diseases

- 15. Do you know of any dental disease that may kill the affected individual if no intervention is done? Yes..... No .....
- 16. If Yes, give example.....

F. Do you use any of the following while taking care of your mouth/teeth?

	Yes	No
1. Toothbrush/paste		
2. Dental floss		
3. Toothpick		
4. Chewing stick		
5. Mouthwash		
6. Rinsing with water after each meal		
7. Tongue scraper		

- 17. How many times do you normally brush your teeth on daily basis? a) Once b) Twice (before breakfast and after dinner) c) After each meal d) Others (specify).....

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