Gender differences in oral health attitudes and behaviour among Nigerian clinical dental students

***Okoh M, **Enabulele J**

*Department of Oral Pathology and Medicine, Faculty of Dentistry,
**Department of Restorative Dentistry, Faculty of Dentistry,
University of Benin Teaching Hospital, Benin City, Nigeria

***Correspondence: Okoh M**
Email: drmerccy@yahoo.com

Abstract

Objective: This study aims to use the modified Hiroshima University Dental Behavior Inventory (HU-DBI) to determine the differences in oral health attitudes and behaviour between male and female clinical dental students at the clinical level in University of Benin.
Method: This study included 141 clinical dental students made up of 85 males and 56 females of the University of Benin. Participation was voluntary and all participants remained anonymous. Demographic information was obtained including age, gender and years of study. The duration of study was from February to May 2010.A modified English version of HU-DBI survey which consists of 22 1temswith dichotomous responses (yes-no) was used in this study.
Result: Of the total 154 clinical (4th, 5th and 6th years of study) dental students, a total of 141 clinical dental students participated in the study by completing the questionnaire giving a response rate of 91.56%. The age of the students ranged from 18 to 35 years with a mean age of 25.26 + 3.5 years.
Statistically significant differences ($p < 0.05$) were found between males and females dental students for items: 2 (I have been to a dentist office before), 14 (I worry about having bad breath), 17 (I eat a lot of refined sugar containing snacks in-between meals) and 19 (I worry about the colour of my teeth).The total mean score between male and female dental students was significant ($P < 0.05$).
Conclusion: The results from this study were in agreement with studies in other countries showing that there are gender differences in some aspects of oral health attitudes and behaviour, and as a matter of fact, improving professional behaviour of the dental students is needed to be improved so as to improve their oral health attitude in order to serve as a positive model for their patients, families and friends.

Key words: Oral health attitude, dental behaviour, dental students

Introduction

Dental students are generally motivated to maintain good oral health[1], and researchers have found that the oral health attitudes and behaviours of dental students differed in the pre- clinical and clinical years[2, 3]. The prevention of oral disease is the most accepted and efficient method for ensuring oral health[4]. Oral health is now recognized to be equally important in relation to general health[5,6], and achieving optimal oral health through preventive efforts is a hallmark of the dental profession[7] and such efforts are geared towards encouraging patients to practice appropriate oral self-care. The improvement of personal oral health has been shown to be linked to dental education experience[1].
The health beliefs and attitudes of dental students, as future dental health providers, not only affects their oral-self-care habits but also potentially influence their patient's ability to take care of their teeth[8, 9,10,11] and shape the public's oral health education level[1]. Dental health providers need to set an example for their patients, family and friends by maintaining good oral health in their own mouth[12]. Studies have also shown that dental students with positive oral health attitude are good models for oral health behaviour and serve as instructors to their friends, family members, patients and their society on how to maintain good oral health[13, 14, 15, 16].
Studies available on gender difference in relation to oral health conducted in Nigeria revealed that females exhibit more positive dental health attitude and better oral health behaviour (tooth brushing frequency[17], using dental floss[18] and regular dental visits[17] than their male counterparts. And most people, especially males only access dental services when in pain[19].
Hiroshima University Dental Behavior Inventory (HU-DBI) was developed by Kawamura[20] to investigate dental health behavior, attitudes and perceptions. The original questionnaire was written in Japanese. It consists of twenty items primarily associated with the oral health attitude and tooth-brushing behavior. All items have dichotomous responses format (agree/disagree). A quantitative estimate of overall oral health attitude and behavior is provided by the total number of appropriate agree/disagree responses. The maximum possible score is 12, where higher scores indicate better oral health attitude and behavior[6, 21].

The dental curriculum in Nigeria is a six-year programme, divided into two parts: Pre-clinical years (years1, 2 and 3) and clinical years (years 4, 5 and 6). Nigerian dental students are only introduced to the preventive aspect of oral health care in the latter half; hence their level of dental education can affect oral health behavior. Therefore, the aim of this study was to use the modified HU-DBI to determine the differences in oral health attitudes and behaviour between male and female dental students at the clinical level in University of Benin.

Materials and Method

This study included 141 clinical dental students made up of 85 males and 56 females of the University of Benin. Participation was voluntary and all participants remained anonymous. Demographic information was obtained including age, gender and years of study. The duration of study was from February to May 2010.
A modified English version of HU-DBI survey **(Table 1)** which consists of twenty-two items with dichotomous responses (yes-no) was used in this study. While first 19 items of the inventory were related to oral health attitudes and behavior, last 3 items were related to smoking habit of dental students. The questionnaire has been used to compare oral health attitudes and behaviours among dental and dental hygiene students in different countries. This inventory has good test-retest reliability as well as good translated validity[22]. Only minor corrections were made and resulting version was used in the present study. The aim of this study was explained and the students completed the questionnaires in their classrooms.
Data obtained from the study were analyzed using the Statistical Package for Social Sciences (Chicago, SPSS; version 17.0). Each item of the inventory was analyzed with Kruskal Wallis test for gender difference in oral health attitude and behaviour. Chi-square test was performed for the 22 items. A P-value less than 0.05 was considered statistically significant, and a P-value less than 0.001 was considered strongly significant.

Table 1
A modified English version of HU-DBI survey.
Items
1. I live with my family now
2. I had been to a dental clinic before
3. I do not go to the dentist unless I have a toothache
4. I brush my teeth twice daily or more
5. My gums bleed when I brush my teeth
6. I have never been taught professionally how to brush
7. I think my teeth are getting worse despite my daily brushing
8. I do not feel I have brushed well unless I brush with strong strokes
9. I feel I sometimes take too much time to brush my teeth
10. I think I can clean my teeth well without using toothpaste
11. It is possible to prevent gum disease with tooth brushing alone
12. I do use tooth floss on regular basis
13. I do use mouth wash on regular basis
14. I worry about having bad breath
15. I am bothered about the colour of my gums
16. I use fluoride containing toothpaste
17. I eat a lot of refined sugar containing snacks in-between meals
18. I am satisfied with the appearance of my teeth
19. I worry about the colour of my teeth
20. I am a smoker
21. I smoke more than half pack per day
22. I have been smoking for more than a year

Table 2: Sample description by academic year, gender and age

	Gender		
	Male (%)	**Female (%)**	**Total (%)**
Acad. year			
4th	13 (15.3)	9 (16.1)	22 (15.6)
5th	34 (40.0)	13 (23.2)	47 (33.3)
6th	38 (44.7)	34 (60.7)	72 (51.1)
Age			
18-25	38 (44.7)	34 (60.7)	72 (51.1)
26-30	39 (45.9)	21 (37.5)	60 (42.6)
31-35	8 (9.4)	1 (1.8)	9 (6.4)
Total	85 (60.3)	56 (39.7)	141 (100)

Table 3: Percentages and analysis of yes response according to gender

Items	**Male (%)** (n=85)	**Female (%)** (n=56)	**Total (%)** (n=141)	**p-value**
Item 1	43 (50.6)	33 (58.9)	76 (53.9)	0.212
Item 2	47 (55.3)	44 (78.6)	91 (64.5)	0.004**
Item 3	50 (58.8)	28 (50.0)	78 (55.3)	0.306
Item 4	47 (55.3)	30 (53.6)	77 (54.6)	0.488
Item 5	10 (11.8)	5 (8.9)	15 (10.6)	0.405
Item 6	16 (18.8)	7 (12.5)	23 (16.3)	0.225
Item 7	4 (4.7)	5 (8.9)	9 (6.4)	0.254
Item 8	18 (21.2)	10 (17.9)	28 (19.9)	0.398
Item 9	14 (16.5)	7 (12.5)	21 (14.9)	0.346
Item 10	5 (5.9)	6 (10.7)	11 (7.8)	0.232
Item 11	34 (40.0)	19 (33.9)	53 (37.6)	0.292
Item 12	19 (22.4)	16 (28.6)	35 (24.8)	0.261
Item 13	21 (24.7)	10 (17.9)	31 (22.0)	0.227
Item 14	35 (41.2)	14 (25.0)	49 (34.8)	0.035*
Item 15	19 (22.4)	7 (12.5)	26 (18.4)	0.104
Item 16	81 (95.3)	52 (92.9)	133 (94.3)	0.397
Item 17	20 (23.5)	30 (53.6)	50 (35.5)	0.000**
Item 18	54 (63.5)	40 (71.4)	94 (66.7)	0.215
Item 19	31 (36.5)	11 (19.6)	42 (29.8)	0.024*
Item 20	2 (2.4)	1 (1.8)	3 (2.1)	0.653
Item 21	2 (2.4)	1 (1.8)	3 (2.1)	0.653
Item 22	2 (2.4)	1 (1.8)	3 (2.1)	0.653

***Significant at P < 0.05; **significant at P < 0.001.**

Result

Of the total 154 clinical (4th, 5th and 6th years of study) dental students, a total of 141 clinical dental students participated in the study by completing the questionnaire giving a response rate of 91.56%.
The age of the students ranged from 18 to 35 years with a mean age of 25.26 + 3.5 years. Sample description by age, year of study and gender is given in **(Table 2).**
The percentages of "yes" responses according to gender are shown in **Table 3.** Statistically significant differences (p <0.05) were found between males and females dental students for items: 2 (I have been to a dentist office before), 14 (I worry about having bad breath), 17 (I eat a lot of refined sugar containing snacks in-between meals) and 19 (I worry about the colour of my teeth). Significantly more females (78.6%) than males (55.3%) have been to a dentist office before (item 2) (P <0.001). More males than females agreed that they put off going to the dentist until they had a toothache (58.8% versus 50.0%) but the difference was not significant (item 3).
Almost about the same proportion of males and females (55.3% and 53.6% respectively) agreed that they brush twice daily (item 4). The majority of the students (83.7%) agreed they have been taught professionally how to brush (item 6); again there was no significant difference between the sexes. 40.0% of males said it is possible to prevent gum diseases with tooth brushing alone compared with 33.9% of the females (item 11). Significantly, more males than females tended to worry about having bad breath (item 14) despite more males brushing daily than females
(P < 0.05). More males (22.4%) than females (12.5%) agreed that they are bothered about the colour of their teeth (item 15). Majority of the students; both males and females (95.3% and 92.9% respectively) use fluoride containing toothpaste (item 16). Significantly, a lot of female students (53.6%) than males (23.5%) tend to eat refined sugar containing snacks in between meals (P< 0.001) (item 17). Female students (71.4%) were more satisfied with the appearance of their teeth compared to male (63.5%) students (item 18). Significantly, more males (36.5%) than females (19.6) were worried about the colour of their teeth (p< 0.05) (item 19). About 2.4% and 1.8% of male and female students respectively were smokers (item 20), although this was not significant.
The total mean score of attitude and behaviour
males was 26.09+20.82, females (17+15.15), with p value % co.001.

Discussion

The overall response rate in this study was high (91.56%). This study compared the differences in oral health attitudes and behaviour between male and female dental students at the clinical level. Dental students should be introduced early to the oral health care education before they come in contact with patients. This is a key factor in developing their dental health attitudes and behaviours in order to allow them to have a positive impact on the dental behaviour and attitudes of their patients[23]. Since males and females have different physiological and psychological behaviours, it is possible that their oral health behaviour might be different as well. Researchers have found that females engage in better oral hygiene behaviour, possess a greater interest in oral health and perceive their own oral health to be better than do males[24].This present study showed gender differences in oral health attitudes with significantly more females (78.6%) having been to a dental clinic previously, than males (55.3%) who put off dental visit unless they had a toothache. This result is in keeping with Ostberg et al., Fukai et al., and Kateeb[24,25,26] who found that females engage in better oral hygiene behaviour, possesses a greater interest in oral health, and perceive their own oral health to be good to a higher degree than males. Also, previous Nigerian studies[19,27], have shown poor utilization of the available oral health services, and most people, especially males, only access such services when in pain.
This study showed that significantly, males tended to care more about having bad breath despite brushing twice daily or more than females (P < 0.05). This may account for more males in this study using mouth washes and spending too much time brushing their teeth. Also, this study showed significantly that males worry about the colour of their teeth (p< 0.05). This is in contrast to a previous study[28] that reported that females worry more about the colour of their teeth. In Sweden, the results from a questionnaire based study showed that about 59% of the subjects were satisfied with the appearance of their teeth[29], in another study[30], 58% of the students were satisfied with the appearance of their teeth. However, this study revealed a higher percentage of dental students (66.7%) were satisfied with the appearance of their teeth, with females (71.4%) having more satisfaction with their tooth appearance than males (63.5%). About 94.3% of students use fluoridated toothpaste. This is comparable to 95.4% earlier reported in Nigeria[18].
In this study, eating of refined sugar containing snacks in-between meals was significantly higher in females (p< 0.001). The understanding of the role of refined sugar as a possible aetiology in dental caries should have an impact on the dental students' oral health behavior so as to positively improve their oral health behaviour and be an agent of change in the community.
Also, this study showed that more female students believed their teeth are getting worse despite daily brushing although they claimed to have been professionally taught how to brush. While, more males do not feel they have brushed their teeth properly until they brush with strong strokes and believe in the necessity of using toothpaste during brushing more often than did female students. The frequency of twice brushing (54.6%) among dental students was a little higher than the 47.5% reported in an earlier study[18] among dental students in Nigeria. All of this is a pointer to the fact that dental students are not translating there oral health knowledge to oral health

behaviour. Similarly, more female students in this study tend to use dental floss on regular basis and recorded less bleeding while brushing. This agrees with previous studies[18,26, 28] that recorded more females floss daily than males.

The rate of smoking (2.1 %) in this study was lower than the 22.0% [31] and 49.4%[32] prevalence of smoking among the other university students earlier reported. Health care providers play an important role in educating patients about the health risks of tobacco use and in promoting tobacco cessation[33]. Smoking and its association with periodontitis and many other oral diseases should be clearly taught to dental students as they could be role models for their future patients[34].

The attitude and behavior among the dental students in this study was good in some areas; especially on the usage of fluoride containing toothpaste to clean their teeth, satisfaction with the appearance of their teeth and avoidance of smoking. Although, they were found to be lacking in some areas, such as the regular use of dental floss and the correct technique of tooth brushing. About 45.4% brushed their teeth less than twice daily, and 55.3% of dental students put off going to the dentist until they had a toothache. There should be emphasis in those areas such as in clinical periodontology that deals with proper maintenance of oral hygiene particularly the technique of tooth brushing. A change in attitude should be encouraged in the students and be encouraged to practice what they are taught.

On the whole, there appears to be a gap in the oral health practice/behaviour of dental students and what is taught in the oral health curriculum. Therefore, the exposure of dental students in Nigeria to preventive training should be earlier than what it is now. If possible, even from the 1st year in the preclinical session instead of 4th year. The exposure should then be in the form of an inverted cone which increases from the 1st to the 6th year. This would lead to an appreciable impact on the oral health behaviour of the dental students.

Conclusion

The results from this study were in agreement with studies in other countries showing that there are gender differences in some aspects of oral health attitudes and behaviour, and as a matter of fact, improving professional behaviour of the dental students is needed to compensate for these differences and to improve their oral health attitude in order to serve as a positive model for their patients, families and friends.

References

1. 1. Cortes FJ, Nevot C, Roman JM, Cuenca E. The evolution of dental health students at the University of Barcelona. J Dent Educ 2002; 66:1203-1208.
2. Polychronopoulou A, Kawamura M, Athanajouli T. Oral self-care behaviour among dental school students in Greece. J Oral Sci 2002; 44: 73-78.
3. Rushabh J, Santhosh T, Chandrakant D. Self-reported dental health attitude and behavior of dental students in India. J Oral Sci 2002; 50:267-272.
4. Dharmashree S, Chandu GN, Shafiulla N. Knowledge, attitude and practices (KAP) towards oral health among professional attending to the mentally disable children in Davangere, Karnataka, India. J IndAssoc Pub Health Dent 2005; 6:5-8.
5. Dilip CL. Health status, treatment requirements, knowledge and attitude towards oral health of police recruits in Karnataka. J IndAssoc Pub Health Dent 2005; 5:20-21.
6. Neeraja R, Kayalvizhi G, Sangeetha P. Oral Health Attitudes and Behavior among a Group of Dental Students in Bangalore, India. Eur J Dent 2011; 5:163-167.
7. Ramsay DS. Patient compliance with oral hygiene regimens: a behavioural self-regulation analysis with implications for technology. Int Dent J 2000: 304 – 11.
8. Abraham NJ, Cirincione UK, Glass RT. Dentist's and Dental hygienist's attitude toward Toothbrush replacement and maintenance. Clin Prevent Dent 1990; 12: 28-33.
9. Freeman R. The determinants of dental health attitudes and behavior. Brit Dent J 1999; 187:15-18.
10. Uitenbroek DG, Schaub RMH, Troomp JAH, Kant JH. Dental hygienist's influence on patient's knowledge, motivation, self-care and perception of change. Comm Dent Oral Epidem 1989; 17:87-90.
11. Brown LF. A comparison of patients attending general dental practices employing or not employing dental hygienists. Aust Dent J 1996; 41: 47-52.
12. Archana JS, Srinath S. A Comparative Study of Oral Health Knowledge, Attitude and Behavior of First and Final Year Dental Students of Udaipur City, Rajasthan. J Oral Health Comm Dent 2008; 2 :46-54.
13. Al-Wahadni AM, Al-Omiri MK, Kawamura M. Differences in self-reported oral health behavior between dental students and dental technology/dental hygiene students in Jordan. J Oral Sci 2004; 46:191 – 197.
14. Al-Omari QD, Hamasha AA. Gender-specific oral health attitudes and behavior among dental students in Jordan. J Contemp Dent Pract 2005; 1: 107 – 114.
15. Nusair KB, Alomari Q, Said K. Dental health attitudes and behaviour among dental students in Jordan. Community Dent Health 2006; 23: 147 – 51.
16. Peker I, Alkurt MT. Oral health attitudes and behavior among a group of Turkish dental students. Eur J Dent 2009; 3: 24 – 31.
17. Azodo CC, Unamatokpa B. Gender difference in oral health perception and practices among Medical House Officers. Russian Open Med J 2012; 1: 0208.
18. Folayan MO, Khami MR, Folaranmi N, Popoola BO, Sofola OO, Ligali TO, Esan AO, Orenuga OO. Determinants of preventive oral health behaviour among senior dental students in Nigeria. BMC Oral Health 2013:13:28.

19. Akaji EA, Oredugba FA, Jeboda SO. Utilization of dental services among secondary school students in Lagos. Nig Dent J 2007; 15:87-91.
20. Levin L, Shenkman A. The relationship between dental caries status and oral health attitudes and behavior in young Israeli adults. J Dent Edu 2004; 68:1185-1191.
21. Komabayashi T, Kwan SY, Hu DY, Kajiwara K, SasaharaH, Kawamura M. A comparative study of oral health attitude and behavior using Hiroshima University-Dental Behavioral Inventory (HU-DBI) between dental students in Britain and China. J Oral Sci 2005; 47:1-7.
22. Kawamura M, Kawabata K, Sasahara H, Fukuda S, Iwamoto Y. Dental behavioral science Part IX. Bilinguals' responses to the dental behavioral Inventory (HU-DBI) written in English and in Japanese. J Hiroshima Univ Dent Soc 1992; 22:185 - 199.
23. Dogan B. Differences in oral health behavior and attitudes between dental and nursing students. MÜSBED 2013; 3:34-40. doi:10.5455/musbed.20130102082831
24. Ostberg AL, Halling A, Lindblad U. Gender differences in knowledge, attitude, behavior and perceived oral health among adolescents. Actaodontol scand 1999; 57:231 - 236.
25. Fukai K, Takaesu Y, Maki Y. Gender differences in oral health behavior and general health habits in an adult population. Bulletin Tokyo Dental College, 1999; 40:187 - 193.
26. Kateeb E. Gender-specific oral health attitudes and behavior among dental students in Palestine. EMHJ. 2010; 16: 329-333.
27. Agbelusi GA, Jeboda SO. Oral health status of 12-year-old Nigerian children. West Afr J Med 2006; 25:195 - 198.
28. Mohammed AN. Gender-specific oral health attitude and behavior among dental students. MDJ. 2009; 6: 48-54.
29. Stenberg P, Hakansson J, Akernman S. Attitudes to dental health and care among 20 to 25 years-old Swedes: results from a questionnaire. Acta Odontol Scand 2000; 58:102-106.
30. Neerajaa R, Kayalvizhia G, Sangeethaa P. Oral Health Attitudes and Behavior among a Group of Dental Students in Bangalore, India. Eur J Dent 2011; 5:163-167.
31. Peker I, Alkurt MT. Oral Health Attitudes and Behavior among a Group of Turkish Dental Students. Eur J Dent 2009; 3: 24 - 31.
32. Oksuz E, Mutlu ET, Malhan S. Characteristics of daily and occasional smoking among youths. Public Health 2007; 121:349 - 356.
33. Mecklenburg RE. Tobacco prevention and control in dental practice: the future. J Dent Educ 2001; 65:375 - 384.
34. Rivera-Hidalgo F. Smoking and periodontal disease. Periodontol 2000. 2003; 32:50 - 58.