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Impact Of Oral Health Education On Oral Health Attitude: A Comparative Analysis Of Medical And Dental Students

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ABSTRACT

Objective: To evaluate the effect of oral health education on oral health attitude and behaviours of dental students using the Hiroshima University-Dental Inventory (HU-DBI) and compare the findings with those obtained from medical students.

Methods: This was a comparative cross-sectional study involving final year dental and medical students of the University of Benin. The research tool was a pre-tested modified HU-DBI survey consisting of 22 items, 19 of which are primarily associated with oral health behaviour and the remaining 3 related to cigarette smoking habit. Parametric analysis in the form of independent T-test was applied to determine the difference in HU-DBI score of the two groups of students. Cross tabulations were used to report categorical variables and these are presented as counts and percentages. The Chi-square test was applied for comparing responses to the questions among the two groups of students with the level of significance set at $p<0.05$. Bonferroni's adjustment was applied by dividing the desired critical alpha level (0.05) by the number of tests (22) being performed and the result used as the critical level in this case 0.002.

Results: The mean HU-DBI score was 5.86±1.93 with the mean HU-DBI score for the dental students being 7.42±1.57 and for the medical students 4.87±1.41. This difference was statistically significant. Dental students have more positive attitudes towards oral health and display health behaviours to a larger extent than medical students.

Conclusion: Studying dentistry exposes dental students to receive oral health related information routinely assisting them in adopting positive oral health behaviour. Therefore, in the overall interest of better health for the populace and inadequate oral health manpower, it is important that the medical curriculum should incorporate structured oral health education.

Keywords: Dental education; Dental students; Medical students; Oral health attitude

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INTRODUCTION

Oral health knowledge is considered to be an essential prerequisite for oral health related behavior[1]. Although only a weak association seems to exist between knowledge and behaviour in cross-sectional studies,[1] medical and dental students come across a great number of patients from different backgrounds during the course of their study. Therefore, with their proper knowledge and oral health behaviour they can play an important role in oral health education of these patients as well as act as role models for these patients and community at large.[1] As health care providers, the oral health behaviour of dental and medical students and their attitudes towards their oral health could affect their capacity to deliver oral healthcare and thus might influence the oral health of their patients.[2,3]

Hiroshima University-Dental Inventory (HU-DBI) consists of 20 dichotomous responses developed by Kawamura to examine oral health attitudes and behaviour of patients in toothbrushing.[4] It is a useful instrument for measuring dental health attitude and behavioural aspects of dental students and may serve as a useful standard for cross-cultural comparisons of dental student.[5]

Dental students through their undergraduate training should logically develop and modify their oral health attitude and oral health seeking behaviour.[6] Medical students should also be in a good position to develop and modify their oral health behaviour since oral health is an important attribute of overall health. The foregoing could affect the oral health seeking behaviour and overall oral health of their patients.[7]

Several studies have been done to compare the oral health attitude and behaviour of dental students with other students such as dental technology/dental hygiene students,[3] medical students,[1,8,9] paramedical students,[1,9] engineering students,[10] nursing students[6] and also with dental professionals.[11] It was found that dental students

had better oral health attitude and behaviour compared with the other students.

All the dental schools in Nigeria are domiciled in the College of Medicine with dental and medical students offering similar courses in the course of their training. At the University of Benin medical and dental students are exposed to similar academic medical programs with both courses spanning a period of six years. The curriculum is summarized as follows:[12,13] Both medical and dental students offer the same courses in the first year (Physics, Chemistry, Zoology, Botany and General Studies). Second and third year, they offer Human Anatomy, Human Physiology and Medical Biochemistry. In addition to the above courses in the third year the dental students also offer Oral Biology comprising Oral Anatomy, Oral Physiology and Oral Biochemistry. In the fourth year both medical and dental students offer Pathology and Pharmacology, with dental students offering additional courses; Dental Materials, junior Operative Techniques and Prosthetics Techniques. In the fifth year dental students join the medical students in sixth year to undertake medicine and surgery courses before proceeding to their sixth year to take purely dental clinical courses (Restorative Dentistry, Oral Surgery, Oral Medicine, Paedodontics, Orthodontics, Community Dentistry, Periodontics, Oral Radiology, Oral Diagnosis and Oral Pathology). In addition to having similar academic courses, they also share the same

Taking into cognizance the similarities and differences in the academic program between medical and dental students the effect of dental education can be evaluated. The inadequate number of trained dentists in Nigeria makes it imperative to also assess the oral health attitude and behaviour of medical students and compare it with that of dental students to ascertain if there is a need for dental specific education to be incorporated into the medical curriculum. It is on this premise that this study was designed, to evaluate the effect of oral health education on the oral health attitude and behaviour of dental students using the HU-DBI as well as compare the findingS with that obtained from medical students.

MATERIALS AND METHODS

This was a comparative cross sectional study involving 2013/2014 final year medical and dental students of University of Benin, who resided at the clinical students' hostel. Informed consent was obtained from all the participants.

The research tool was a pre-tested modified HU-DBI survey consisting of 22 items, 19 of which are primarily associated with oral health behaviour and the remaining 3 related to cigarette smoking habit. All of the items have a dichotomous response format (Yes/No). A quantitative estimate of oral health attitude and behavior was provided by the total appropriate Yes/No responses from 12 items. Of the 12 items 6 items were given one point for each "Yes" response (marked as (Y)) and zero for the "No" response while for the other 6 items one point was given for each "No" response (marked as (N)) and zero for "Yes" response. The maximum possible HU-DBI score was 12. For the purpose of analysis the scores were graded as follows: Good attitude 8-12, Fair attitude 4-7, Poor attitude ≤ 3. Information on age and gender were also included as part of the data collected.

The questionnaire was administered to volunteering final year dental and medical students at the University of Benin. The questionnaires were collected after being filled by the students within the hour of administration with all the students seated and interaction between students discouraged.

Data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 17.0. The descriptive statistical analysis used for continuous parameters consisted of mean and standard deviation. Parametric analysis in the form of independent T-test was applied to determine the difference in HU-DBI score of the two groups of students. Cross tabulations were used to report categorical variables and these are presented as counts and percentages. The Chi-square test was applied for comparing responses to the questions among the two groups of students with the level of significance set at $p<0.05$. Bonferroni's adjustment was applied by dividing the desired critical alpha level (0.05) by the number of tests (22) being performed and the result used as the critical level in this case 0.002.

RESULTS

The final year dental and medical students in the year of the study were 231 consisting of 85 dental and 146 medical students. A total of 185 students who reside in the clinical students' hostel participated in the study. The participants comprised 72 (38.9%) dental and 113 (61.1%) medical students giving a ratio of 1: 0.6 medical to dental students that reside in the clinical students' hostel. The male female ratio was 1: 0.9 and most of the respondents were in the age group 26 to 30 years (Table 1). There was no statistically significant association between gender and status (ie medical or dental student) of the participants (Table 2).

The mean HU-DBI score was 5.86±1.93 with the mean HU-DBI score for the medical students being 4.87±1.41 and 7.42±1.57 for the dental students. This difference was statistically significant (p=0.001, F-value = 1.739, df 183). Table 3 shows that the relationship between the oral health attitude grades and status of the student was statistically significant with more dental students exhibiting good oral health attitude while a higher proportion of the medical students exhibited fair oral health attitude. Table 4 shows the percentage analysis of yes and no responses according to status of the students and the family error rates. Using the Bonferroni's adjustment with the critical alpha level set at 0.002 statistically significant differences were obtained for questions 2, 5, 7, 11, 15-20. There was statistically significant difference between the dental and medical students previous visit to a dentist office with more dental students having visited. More medical than dental students visit the dentist only when they have symptoms although this was not statistically significant.

Bleeding while brushing was experienced more by medical students and this was statistically significant although only a few medical students felt they had not brushed properly until they brushed with strong strokes. Most of the medicals and dental students reported brushing twice a day however, majority of the medical students thought their teeth were getting worse despite daily brushing. More medical students tend to floss on regular basis compared with the dental students and this was statistically significant. Medical students were more worried about having bad breath and also more bothered about the color of their gums and this was statistically significant.

Dental students reported using fluoride containing toothpaste more than the medical students and this was statistically significant. Majority of the medical students admitted that they ate a lot of refined sugar containing snacks in-between meals compared with dental students and this was statistically significant. Majority of the medical students were not satisfied with the appearance of their teeth and were worried about its color. No dental student admitted smoking and this was statistically significant.

Table 1: Demographic characteristics of the participants

Characteristics	Frequency	Percent
Class		
Medical	113	61.1
Dental	72	38.9
Gender		
Male	99	53.5
Female	86	46.5
Age (years)		
<25	24	13.0
26-30	153	82.7
31-35	8	4.3

Table 2: Gender distribution by status of the participants

Status	Male n (%)	Female n (%)	Total n (%)	P-value
Medical student	61 (61.6)	52 (60.5)	113 (61.1)	0.87
Dental student	38 (38.4)	34 (39.5)	72 (38.9)	
Total	99 (100.0)	86 (100.0)	185 (100.0)	

Table 3: Oral health attitude by status of participants

Status	Oral health attitude				P-value
	Poor n (%)	Fair n (%)	Good n (%)	Total n (%)	0.01
Medical students	18 (15.9)	93 (82.3)	2 (1.8)	113 (100.0)	
Dental students	1 (1.4)	33 (45.8)	38 (52.8)	72 (100.0)	
Total	19 (10.3)	126 (68.1)	40 (21.6)	185 (100.0)	

DISCUSSION

A ratio of 1: 0.64 medical to dental students corroborates previous reports that more people are enrolled for medicine compared to dentistry as a course of study.[14] The male preponderance and absence of an association between gender and status (i.e. medical or dental student) of the participants highlights that medicine and dentistry are still male dominated profession in Nigeria.

Several studies have reported that oral health attitudes become more positive and improved with increasing levels of dental education.[3,15-19] In this study, the mean HU-DBI score for the medical students was 4.87 which is similar to that reported for pharmacy students.[20] This reflects the level of

oral health education acquired and exposure to oral health education by other health related course students. The mean HU-DBI score of 7.42 for the dental students was slightly higher than that reported among dental students in Saudi Arabia[15] but similar to that reported for Turkish clinical students.[21] This shows that dental education world over has a strong relationship

Table 4: Response to HU-DBI survey by status of the participants

HU-DBI SURVEY	Medical students		Dental students		Total		P value
	Yes n(%)	No n(%)	Yes n(%)	No n(%)	Yes n(%)	No n(%)	
Q1: I live with my family now	69(61.1)	44(38.9)	42(58.3)	30(41.7)	111(60.0)	74(40.0)	0.71
Q2: I had been to a dentist office before	51(45.1)	62(54.9)	56(77.8)	16(22.2)	107(57.8)	78(42.2)	0.0001
Q3: I do not go to the dentist unless I have a toothache	63(55.8)	50(44.2)	30(41.7)	42(58.3)	93(50.3)	92(49.7)	0.06
Q4: I brush my teeth twice daily or more	79(69.9)	34(30.1)	43(59.7)	29(40.3)	122(65.9)	63(34.1)	0.15
Q5: My gums bleed when I brush my teeth	69(61.1)	7(9.7)	44(38.9)	65(90.3)	76(41.1)	109(58.9)	0.0001
Q6: I have never been professionally taught how to brush	15(13.3)	98(86.7)	12(16.7)	60(83.3)	27(14.6)	158(85.4)	0.52
Q7: I think my teeth are getting worse despite my daily brushing	39(34.5)	74(65.5)	6(8.3)	66(91.7)	45(24.3)	140(75.7)	0.0001
Q8: I do not feel I have brushed my teeth properly until I brush with strong strokes	14(12.4)	99(87.6)	12(16.7)	60(83.3)	26(14.1)	159(85.9)	0.41
Q9: I feel that I spend too much time brushing my teeth	38(33.6)	75(66.4)	11(15.3)	61(84.7)	49(26.5)	136(73.5)	0.006
Q10: I think I can clean my teeth without using toothpaste	11(9.7)	102(90.3)	6(8.3)	66(91.7)	17(9.2)	168(90.8)	0.75
Q11: It is possible to prevent gum diseases with tooth brushing alone	16(14.2)	97(85.8)	30(41.7)	42(58.3)	46(24.9)	139(75.1)	0.0001
Q12: I use tooth floss on regular basis	49(43.4)	64(56.6)	21(29.2)	51(70.8)	70(37.8)	115(62.2)	0.05
Q13: I do use mouth wash on a regular basis	26(23.0)	87(77.0)	11(15.3)	61(84.7)	37(20.0)	148(80.0)	0.2
Q14: I worry about having bad breath	24(21.2)	89(78.8)	25(34.7)	47(65.3)	49(26.5)	136(73.5)	0.04
Q15: I am bothered about the colour of my gums	75(66.4)	38(33.6)	13(18.1)	59(81.9)	88(47.6)	97(52.4)	0.0001
Q16: I use fluoride containing toothpaste	38(33.6)	75(66.4)	68(94.4)	4(5.6)	106(57.3)	79(42.7)	0.0001
Q17: I eat a lot of refined sugar containing snacks in-between meals	102(90.3)	11(9.7)	31(43.1)	41(56.9)	133(71.9)	52(28.1)	0.0001
Q18: I am satisfied with the appearance of my teeth	51(45.1)	62(54.9)	50(69.4)	22(30.6)	101(54.6)	84(45.4)	0.0001
Q19: I worry about the colour of my teeth	70(61.9)	43(38.1)	17(23.6)	55(76.4)	87(47.0)	98(53.0)	0.0001
Q20: I am a smoker	47(41.6)	66(58.4)	0(0.0)	72(100.0)	47(25.4)	138(74.6)	0.0001
Q21: I smoke more than half pack a day	9(8.0)	104(92.0)	0(0.0)	72(100.0)	9(4.9)	176(95.1)	0.01
Q22: I have been smoking more than a year	1(0.9)	112(99.1)	0(0.0)	72(100.0)	1(0.5)	184(99.5)	0.42

with oral health attitudes displayed by dental students.

The statistically significant association between status of students and mean HU-DBI score lends credence to the fact that dental students have better oral health attitude and behaviour compared with students of other allied health stream[1,3,6,9]. It also reflects the influence of dental education on oral health attitudes and corroborates the report that the attitudes and behaviour of oral health providers towards their own oral health reveals their understanding of the importance of preventive oral health.[22]

Lack of oral health knowledge has been associated with low rates of utilization of dental services. This study showed that more dental students had visited the dentist compared to medical students with more medical than dental students visiting only when they have symptoms. This is similar to previous reports on medical students,[23,24] pharmacy students,[20] dental hygiene and nursing students,[25] and health sciences students.[26] This is a pointer to the effect of dental education among the dental students giving the fact that both groups in this study had similar education and exposure except for the dental education. It also illustrates the need for oral health education for medical students.

Bleeding while brushing was experienced more by medical students and this was statistically significant. Although only a few medical students felt they had not brushed properly until they brushed with strong strokes.

Similar to a finding among pharmacy students,[20] most of the medicals and dental students reported brushing twice a day however, majority of the medical students thought their teeth were getting worse despite daily brushing. This could be a reflection of the lack of oral health knowledge and proper way of brushing.

More medical students tend to use tooth floss on regular basis compared with the dental students and this was statistically significant. This may be attributed to the quest for better dentition especially, as the medical students despite twice daily brushing still perceived that their teeth were getting worse.

Dental students reported using fluoride containing toothpaste more than the medical students and this was statistically significant. This probably reflects the lack of knowledge regarding the constituents of toothpaste available especially as a lot of brands in the market contain fluoride.

Majority of the medical students admitted that they ate a lot of refined sugar containing snacks in-between meals compared with dental students and this was statistically significant. This reflects the understanding of the importance of preventive dental education among the dental students and lends credence to the consideration that oral health information is an essential prerequisite for health-related behaviour.[23]

Also, most of the medical students were not satisfied with the appearance of their teeth and were worried about its colour. This finding is comparable to that reported among Chinese dental students.[15] This may be an indicator of the need for adequate oral health education for medical students with resultant improvement in the oral health of the general population.

The dental students did not admit smoking cigarette and this was statistically significant. This may have been positively influenced by course content related to the oral effects of tobacco smoking which include oral, pharyngeal and esophageal cancers,[27] teeth staining and periodontal disease.[28]

CONCLUSION

In conclusion, studying dentistry exposes dental students to receive oral health related information routinely and thereby assist them in adopting positive oral health behaviour. All members of the health care team have the potential to promote oral health by supporting accurate oral health care messages, showing dental health related behaviours, encouraging regular dental visits and participating in oral health promoting activities within their scope of duties.[8] Therefore, in the overall interest of better health for the populace and inadequate oral health manpower, it is important that the medical curriculum in the University of Benin should incorporate structured oral health education.

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