A COMPARATIVE STUDY OF ORAL HEALTH ATTITUDES AND BEHAVIOR BETWEEN DENTAL AND MEDICAL STUDENTS; THE IMPACT OF DENTAL EDUCATION IN UNITED ARAB EMIRATES*

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Abstract

Background: The aim of this study was to determine the differences in oral health attitudes and behavior between second year dental and medical students studying at the University of Sharjah, United Arab Emirates.

Methods: The examination was mainly based upon responses to a questionnaire titled "Hiroshima University – Dental Behavioral Inventory (HU-DBI)". Higher scores on the HU-DBI indicate better oral health attitudes/behavior.

Results: The mean HU-DBI score of the 2nd-year dental students was significantly greater than that of the 2nd-year medical students (9.45 and 6.85, respectively; $p<0.001$). The percentages of 'agree' responses in two HU-DBI questionnaire items were significantly higher among dental students than medical students. They include: "dental visits" and "I am bothered by the color of my gums." Over 60% of medical students seek dental care only when there is dental pain, compared with 25% of dental students ($p<0.01$). Also, when students were classified according to gender, significant differences of the mean HU-DBI scores were observed.

Conclusion: Present study is the first formal assessment of dental health knowledge and oral-health related behavior of second year dental and medical students, and there found to be considerable differences related to dental health attitudes/behavior, which indicates the impact of dental health knowledge on student oral health outcomes, such as their positive attitudes toward prevention and personal oral care.

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Introduction

Although dental diseases are not life-threatening, they are detrimental to the quality of life throughout the life span and can have an impact upon the self-esteem, nutrition and health of an individual. Oral diseases are associated with considerable pain, anxiety, and impaired social functioning [1,2].

Oral health information is considered to be an essential prerequisite for health-related behavior. The first step in establishing a habit is to provide relevant information to the patients and to raise their awareness of how to prevent oral diseases[3]. After going through an undergraduate dental curriculum; dental students are expected to be a role model for oral health behavior. An important task of oral health professionals is to instill in their patients correct oral habits to prevent oral diseases. According to Peker et al. the attitudes and behavior of oral

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health providers towards their own oral health reflect their understanding of the importance of preventive dental procedures and of improving the oral health of their target population [4].

In the UAE, the oral health system is currently in transition. Our information is limited regarding the knowledge and attitudes about oral diseases and their prevention. Systematic data are needed for public oral healthcare planning. Due to a lack of studies about oral health attitudes and behavior among pre-university and university students in the UAE, this study is of prime importance in this field.

The purpose of this study was to assess self-reported oral health attitudes and behavior among a group of dental and medical students at the University Colleges and to compare differences in oral health attitudes between second year dental and medical students at the University of Sharjah, United Arab Emirates.

Material and Methods

The study population consisted of (N=126) students in the second year of medicine and dentistry programs at the University of Sharjah, UAE. The Research Ethics Board of the University of Sharjah approved the project. The students were invited to complete the English versions of a questionnaire titled "Hiroshima University – Dental Behavioral Inventory (HU-DBI)" following a lecture. Participation in the study was voluntary and the answers were anonymous. Students were given the option of discontinuing at any time. To ensure anonymity the names were not recorded on the questionnaire.

The HU-DBI questionnaire, consists of twenty polar responses (agree-disagree) regarding oral health-related behavior. In addition, two further questions about frequencies of brushing and flossing were included. A total score was calculated based on the response to each item. Higher scores on the HU-DBI indicate better oral health attitudes/behavior. The possible maximum score is 12. Each additional item, i.e. tooth brushing and flossing frequency, has 4 categories (4 times and more, 3 times, twice, and every day for tooth brushing frequency and once a week, once a month, and never, for flossing frequency respectively).

The data was entered into SPSS version 14.0. and used for statistical analysis. The data was analyzed for frequency distributions. Group comparisons were made using Mann-Whitney U-tests for ordinal level data and chi-square tests for categorical data. The significance level was set at $p \leq 0.05$.

Results

One hundred and twenty-six participants from dental (n=63) and medical (n=63) colleges respectively, consented to participate in the study. The mean age of Dental and Medical students was 19.65 (SD=0.53). In both samples, the percentage of female students was higher (n=46, 73% and n=41, 65%, dental and medical, respectively).

Items	
Item 1	I don't worry much about visiting the dentist
Item 2	My gums tend to bleed when I brush my teeth (D)
Item 3	I worry about the color of my teeth
Item 4	I have noticed some white sticky deposits on my teeth (A)
Item 5	I use a child-sized toothbrush
Item 6	I think that I cannot help having false teeth when I am old (D)
Item 7	I am bothered by the color of my gums
Item 8	I think my teeth are getting worse despite my daily brushing (D)
Item 9	I brush each of my teeth carefully (A)
Item 10	I have never been taught professionally how to brush (D)
Item 11	I think I can clean my teeth well without using toothpaste (A)
Item 12	I often check my teeth in a mirror after brushing (A)
Item 13.	I worry about having bad breath
Item 14	It is impossible to prevent gum disease with toothbrushing alone (A)
Item 15	I put off going to the dentist until I have toothache (D)
Item 16	I have used a dye to see how clean my teeth are (A)
Item 17	I use a toothbrush with hard bristles
Item 18	I don't feel I've brushed well unless I brush with strong strokes
Item 19	I feel I sometimes take too much time to brush my teeth (A)
Item 20	I have had my dentist tell me that I brush very well
Item 21	I do use tooth floss on regular basis (A)
Item 22	I brush my teeth twice daily or more (A)

Table 1. Modified English version of HU-DBI Questionnaire survey.

Overall, significant differences of the mean HU-DBI scores of dental (9.45±1.48) and medical students (6.85±1.63) were observed. Moreover, in a comparison of the HU-DBI means of medical and dental students by gender, there were statistically significant differences ($p<.05$) Table 2.

	Dental school Mean (S.D.) HU-DBI	Medical school Mean (S.D.) HU-DBI	*P*-value
Female	9.46±1.31	6.63±2.52	**
Male	6.84±1.72	5.73±1.78	*
***P*-value**	**		

*Obtained using *t*-test, *:p<0.05, **p<0.01

Table 2. Comparison of the HU-DBI Mean scores between school and by gender.

Items	School	Female	Male	Total	p-value*	
Item 1	D	5	14	8	ns	
	M	38	20	30	*	**
Item 2	D	24	32	25	ns	ns
	M	21	23	22	ns	
Item 3	D	70	36	58	*	ns
	M	61	51	57	ns	
Item 4	D	28	21	24	*	
	M	12	8	9	ns	**
Item 5	D	12	10	10	ns	ns
	M	11	2	9	ns	
Item 6	D	24	34	27	ns	ns
	M	35	23	31	ns	
Item 7	D	26	10	16	ns	
	M	31	32	33	ns	*
Item 8	D	22	32	27	ns	ns
	M	35	10	26	*	
Item 9	D	61	51	55	ns	ns
	M	42	41	40	ns	
Item 10	D	11	15	12	ns	
	M	49	24	38	*	**
Item 11	D	4	15	9	ns	
	M	7	19	13	ns	*
Item 12	D	89	45	77	**	ns
	M	68	62	65	ns	
Item 13	D	45	41	40	ns	ns
	M	38	26	36	ns	
Item 14	D	61	56	53	ns	ns
	M	57	48	49	ns	
Item 15	D	23	21	20	ns	
	M	58	42	46	ns	**
Item 16	D	21	14	17	ns	ns
	M	18	16	15	ns	
Item 17	D	28	34	29	ns	ns
	M	31	41	33	ns	
Item 18	D	29	39	34	ns	ns
	M	38	44	39	ns	
Item 19	D	52	63	59	ns	
	M	31	38	33	ns	*
Item 20	D	10	12	11	ns	ns
	M	6	8	7	ns	

Table 3. HU-DBI questionnaire and percentage of "agree" response by gender and school.
A) D: dental school, M: medical school
B) In the calculation of the HU-DBI: (A) = One point is given for each of these agree responses. (D) = One point is given for each of these disagree responses
C) *Obtained using the chi-square test; upper left: between gender in D, lower left: between gender in M; right between Dental and Medical, *p<0.05, **p<0.01 , ns= non significant.

The HU-DBI questionnaire items and percentage distribution and analysis of "agreed" responses of medical and dental students are shown in Table 3. Statistically significant differences were found for items 1, 4, 7, 10, 11, 15, and 19 between the two sample groups. Only 8% of the dental students were not much worried about visiting a dentist (item 1), compared to 30% of the medical students who were (p<0.01).

Moreover, 46% of medical students reported that they "put off going to the dentist until have toothache" compared with 20% of dental students (p<0.01). About one third of the medical students reported that they "have never been taught professionally how to brush" (item 10), whereas 12% of the dental students agreed with this statement (p<0.01). Furthermore, from the medical group only 9% stated "noticing some white sticky deposits on teeth" versus 24% of dental students (p<0.01).

According to gender, percentage and analysis of "agreed" responses are shown in Table 3. For both medical and dental students, statistically significant differences were found (p<.05) for items 3, 4, and 12 (I worry about the color of my teeth, I have noticed some white sticky deposits on my teeth, I often check my teeth in a mirror after brushing) respectively, and for items 1, 8 and 10 (I don't worry much about visiting the dentist, I think my teeth are getting worse despite my daily brushing, and I have never been taught professionally how to brush) respectively.

	Dental school			Medical school		
	Females	Males	Total	Females	Males	Total
Tooth brushing frequency						
4X and more	12	1	8	8	0	5
3X	39	21	28	25	22	23
2X	48	68	57	66	66	66
1X	1	10	7	1	12	6
Between gender	*			ns		
Between schools	ns					
Flossing frequency						
Everyday	64	25	46	25	14	20
1x a week	12	19	16	10	8	9
1x a month	7	12	10	8	10	9
Nil	17	44	28	57	68	62
Between gender	**			ns		
Between schools	*					

Table 4. Percentage of tooth brushing per day and flossing frequency by gender and school.
*Obtained using Mann-Whitney U-tests, ns= non significant. *p<0.05, **p<0.01.

In an analysis of oral-health related behavior (tooth brushing and flossing) by gender, medical and dental students showed highly significant differences ($p<0.01$) Table 4. 64% of female dental students floss every day compared with their male colleagues (25%; $p<0.01$).

However, only about 25% of the female medical students reported that they floss every day, whereas only 14% of the male medical students agreed with this statement and there was found to be no statistical difference between the genders.

Discussion

Numerous descriptive, clinical, and health services studies make it clear that health behavior in general, and oral health behavior in particular are complex phenomena [5]. Several studies have reported that dental health attitudes become more positive and improved with an increasing level of dental education [6-10]. The improvement of personal oral health among dental students is linked to their dental education experience, and oral health attitudes and behavior seem to increase significantly in the final years of dental education [11-12]. Hence, oral health knowledge is considered to be an essential prerequisite for health-related behavior. Conversely, few studies have suggested that weak association seems to exist between knowledge and behavior [13-14].

In the UAE, no data are available on an assessment of the oral self-care level of adolescents. The present study was designed to assess levels of oral health knowledge, beliefs and self-reported behavior among 18-22-year-old medical and dental students, which provides new insights into the impact of curricula on student outcomes, such as their attitudes toward prevention and oral self-care.

The second year dental students in the first year of their training program have received knowledge and skills to develop an understanding of the role of preventive dentistry and oral-health care, in the management of common oral health problems, e.g. dental caries, gingivitis, tooth wear etc., though the medical students have never received such information.

The mean HU-DBI score of the dental students was high compared to the medical students, which suggested that dental students' oral self-care levels may have been positively influenced by the course content related to dental health education. The results of this study were consistent with those reported by Kawamura et al. [15] of a survey, using the HU-DBI, which reported that the mean HU-DBI score of second year dental hygiene students was considerably higher than that of second year nursing students. Though the results were statistically significant, our sample size was relatively small, which was a limitation in our study; a further study with a larger sample population could reveal stronger relations than reported here.

In a recent study, gender was a major factor influencing the HU-DBI percentage of agree/disagree responses for items (worry about the color of teeth, noticed some white sticky deposits on teeth and often check my teeth in a mirror after brushing). Female dental students showed a significantly better attitude than their male colleagues. This finding is consistent with previous studies [16-17].

Generally, females are more likely to have positive self-care attitudes for internal psychosocial reasons, to improve their appearance and self-esteem.

Two findings from the present study are of particular importance. The majority of the medical students reported that they "don't worry much about visiting the dentist" and "put off going to the dentist until they have toothache", which is identical to a study from Kuwait [18]. These low rates of visiting dental clinics could be due to the UAE medical insurance system, which usually does not cover dental services. It might also be caused by tradition and lack of formal health care at the community level. There may be a previous bad dental experience, or simply the extra time required for frequent visits might not be acceptable. Lack of sufficient knowledge about dentistry can be a factor, as one's knowledge and positive attitude toward good health care are very important in the preventive cycle [6-10]. For that, there is a need for organized intervention, which could lead to improving oral and dental health status through increasing the population's knowledge, attitudes, and behavior.

The results also showed that young people in the UAE are not educated enough when flossing is concerned. Similar data on oral hygiene habits was found in Poland, Kuwait and Switzerland[18-20], where respondents had a comprehensive basic dental knowledge and almost everyone used a toothbrush regularly, but

flossing fell short in the majority of cases.

Dental health care education in the pre-university curriculum can have a strong positive influence on oral-health related attitudes and behaviour. These results indicate the need for intervention through oral health education and promotion to alter individuals' behaviour related to dental health. Additional studies are needed to evaluate information about oral health care information in the pre-university programs in the UAE, which could be an important factor influencing the oral-health-related attitudes and behaviour of the general population. Therefore, more emphasis should be placed on oral health education and basic oral health supplies through school-based and community oral health programs.

As oral health means much more than healthy teeth, and is essential for general health[2], the dentist's role should not be limited only to provision of dental treatment. A major role should also be to raise the knowledge and awareness needed to prevent oral diseases.

Conclusions

This study was the first formal assessment of dental health knowledge and oral-health related behaviour of medical and dental students. The present study cannot predict the participants' actual oral health status, which is another limitation of our study. In the second phase of the study, we will assess the epidemiologic relationship between oral health attitudes and behaviour and oral health status of medical and dental students; also their oral and dental health knowledge and oral self care improvement with the increasing level of dental education in the sample population of dental students. Future studies will also include comparison of oral health behavior between dental students in UAE versus other countries in the world.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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