

Oral Health Attitudes and Behavior among a Group of Turkish Dental Students

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ABSTRACT

Objectives: The purpose of this study was to evaluate self-reported oral health attitude and behavior among a group of Turkish dental students and to compare differences in oral health attitudes between years of study and gender.

Methods: This study included 267 (153 female, 114 male) dental students. A modified English version of Hiroshima University Dental-Behavioral Inventory (HU-DBI) which consists of twenty-eight dichotomous responses (yes-no) was used.

Results: Totally 141 preclinical (1, 2 and 3rd years of study) and 126 clinical students (4 and 5th years of study) who were mean age of 21.16 participated in the study. Statistically significant differences were found between years of study for brushing each of teeth carefully, cleaning the teeth well without using toothpaste, using a toothbrush which has hard bristles and for having had their dentist tell that they brush very well. There were statistically significant differences between females and males for using a toothbrush which has hard bristles and using tooth floss regularly. Statistically significant differences were found for brushing each of the teeth carefully and using mouth wash on regular basis between smokers and non-smokers.

Conclusions: This study confirmed that oral and dental health behavior and attitudes and also their knowledge about oral and dental health care of dental students improved with increasing level of education while oral and dental health care of female students were better than males and oral and dental health care of non-smokers were better than smokers. (Eur J Dent 2009;3:24-31)

Key words: Oral health behavior; Dental attitudes; Dental students; Turkey.

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INTRODUCTION

The behavior of oral health providers and their attitudes towards their own oral health reflect their understanding of the importance of preventive dental procedures and improving the oral health of their patients. The dental students are expected to be a good example for oral health behavior. Also, dental students should instruct their friends, family members, patients and their society to maintain good oral health.^{1,2}

The basis for health care in countries with

similar social systems is usually the same. Comparison of countries having different bases for health care and different languages is much more complicated and time-consuming.³ Hiroshima University-Dental Behavioral Inventory (HU-DBI) was developed by Kawamura to investigate dental health behavior, attitudes and perceptions.⁴ Oral health attitudes and behavior of dental and/or dental hygiene students were evaluated frequently by using this scale in several countries.⁵⁻⁸ But there is insufficient data for oral health attitudes and behavior among Turkish dental students.

The purpose of this study was to evaluate self-reported oral health attitudes and behavior among a group of Turkish dental students by using modified HU-DBI and to compare differences in oral health attitudes between years of study and gender.

MATERIALS AND METHODS

This study included 267 dental students (153 female, 114 male) in Gazi University. Participation was voluntary and all participants remained anonymous. Demographic information was obtained including age, gender and years of study. The data collection was conducted during the autumn semester of academic year 2007-2008.

A modified English version of HU-DBI survey (Table 1) which consists of twenty-eight dichotomous responses (yes-no) was used in this study. While first 25 items of the inventory were related with oral health attitudes and behavior, last 3 items were related with smoking habit of dental students. This inventory has good test-retest reliability as well as good translated validity.⁹ The translation was discussed with one expert who had experience with questionnaires and survey research. Only minor corrections were made and resulting version was used in the present study. No separate validity testing was performed from the English to Turkish translation. The aim of this study was explained and the students completed the questionnaires in their classrooms during one lecture.

Data analysis

Data analysis was performed by using SPSS-version 11.5 for Windows (SPSS Inc., IL). Each item of the inventory was analyzed with Kruskal Wallis test for years of study and analyzed with

Mann Whitney U test for gender. Chi-square test was performed for analysis between each of first 25 items and last 3 items.

Table 1. A modified English version of HU-DBI survey.

Items
1 I live with family now
2 I had been to a dentist office before
3 I don't worry much about visiting the dentist
4 My gums bleed when I brush my teeth
5 I have noticed some white sticky deposits on my teeth
6 I use a child sized toothbrush
7 I think that I cannot help having false teeth when I am old
8 I am bothered by the color of my gums
9 I worry about the color of my teeth
10 I think my teeth are getting worse despite my daily brushing
11 I brush my teeth twice daily or more
12 I brush each of my teeth carefully
13 I have never been taught professionally how to brush
14 I think I can clean my teeth well without using toothpaste
15 I often check my teeth in mirror after brushing
16 I worry about having bad breath
17 It is impossible to prevent gum disease with tooth brushing alone
18 I put off going to the dentist until I have toothache
19 I use a toothbrush which has hard bristles.
20 I don't feel I've brushed well unless I brush with strong strokes
21 I feel I sometimes take too much time to brush my teeth
22 I have had my dentist tell me that I brush very well
23 I do use tooth floss on regular basis
24 I do use mouth wash on regular basis
25 I am satisfied with the appearance of my teeth
26 I am a smoker
27 I smoke more than 10 cigarettes per day
28 I have been smoking for more than one year

RESULTS

Totally 267 dental students (153 female, 114 male) who were mean age of 21.16 and consisting 141 preclinical (1, 2 and 3rd years of study) and 126 clinical students (4 and 5th years of study) participated in the study (Table 2).

Percentages and analysis of “yes” responses according to years of study is shown in Table 3. Statistically significant differences ($P<.05$) were found for item 1, 12, 14, 19, 22, 26 and 28 between years of study. For living with family (item 1), there were statistically significant differences ($P<.05$) between 1st-5th, 2nd-5th and 3rd-5th years of study. For brushing each of teeth carefully (item 12), statistically significant differences ($P<.05$) were found between 1st-2nd, 1st-3rd, 1st-4th and 1st-5th years of study. For cleaning the teeth well without using toothpaste (item 14), there were statistically significant differences ($P<.05$) between 1st-5th, 2nd-5th, 3rd-5th and 4th-5th years of study. For using a toothbrush which has hard bristles (item 19), statistically significant differences ($P<.05$) were found between 1st-5th, 2nd-5th and 3rd-5th years of study. For having had their dentist tell that they brush very well (item 22), there were statistically significant differences ($P<.05$) between 1st-5th, 1st-4th, 2nd-5th and 3rd-5th years of study. For smoking habit (item 26), statistically significant differences ($P<.05$) were found between 2nd-3rd, 2nd-4th and 2nd-5th years of study. For smoking more than one year (item 28), there were statistically significant differences ($P<.05$) between 1st-3rd, 1st-4th and 2nd-4th years of study.

Percentages and analysis of “yes” responses according to gender are shown in Table 4. Statistically significant differences were found ($P<.05$) between females and males for item 19 (I use a toothbrush which has hard bristles) and

item 23 (I do use tooth floss on regular basis). Statistically significant differences ($P<.05$) were found between females and males for item 26 (I am a smoker), item 27 (I smoke more than 10 cigarettes per day) and item 28 (I have been smoking for more than one year).

Analysis between each of first 25 items which respond “yes” and last 3 items which respond “yes and no” is shown in Table 5. There were statistically significant differences ($P<.05$) between item 1 (living family)-item 26 (smoking), item 27 (smoking more than 10 cigarettes per day) and item 28 (smoking more than one year). The rates of yes responses to items 26, 27 and 28 were higher in the students not living with family than living with family. Statistically significant differences ($P<.05$) were found for item 12 (brushing each of the teeth carefully), item 17 (it is impossible to prevent gum disease with tooth brushing alone) and item 24 (I do use mouth wash on regular basis) between smokers and non-smokers.

DISCUSSION

Oral health behavior and attitudes among oral health workers and students were evaluated by using HU-DBI survey worldwide in several studies,^{1,4,6} which were performed in different countries. Even, cultural differences in countries with similar or different social systems were investigated in previous studies.^{3,7,10-12} Due to lack of studies about oral health attitudes and behavior among Turkish dental students, this study is of prime importance in this field. Self-reported oral health attitudes and behavior among a group of Turkish dental students by using modified HU-DBI and differences between years of study, gender and effect of smoking habits on oral health attitudes were evaluated.

Table 2. Sample description by year of study and gender.

Years of study	N	%	Mean age±SD	Female		Male	
				N	%	N	%
1 st year	37	13.9	18.7±0.73	24	64.9	13	35.1
2 nd year	54	20.2	20.4±0.96	28	51.9	26	48.1
3 rd year	50	18.7	21.1±0.65	28	56.0	22	44.0
4 th year	64	24.0	22.3±1.08	40	62.5	24	37.5
5 th year	62	23.2	23.1±0.84	33	53.2	29	46.8
Total	267	100.0	21.4±1.69	153	57.3	114	42.7

It was reported that education about dental health care in the pre-university curriculum could be an important factor that can influence the oral health attitudes of students entering dental field.² Kirtiloglu and Yavuz¹³ indicated that self-preventive oral behavior of the Turkish non-dental university

students is at a lower level than in industrialized countries. They reported that 68% of the students brushed their teeth two or more times per day and few subjects (3%) used dental floss daily. Thirty percent of the students visited a dentist for preventive treatment at least once a year. The rate

Table 3. Percentages and analysis of “yes” responses according to years of study.

Items	Years of study					Total N (%)	P value
	1 st year N (%)	2 nd year N (%)	3 rd year N (%)	4 th year N (%)	5 th year N (%)		
Item 1	13 (34.2) [¶]	22 (40.7) [¶]	15 (30.0) [¶]	29 (45.3)	39 (60.9)	118 (43.7)	0.010
Item 2	30 (78.9)	50 (92.6)	38 (76.0)	54 (84.4)	58 (90.6)	230 (90.6)	0.078
Item 3	27 (71.1)	43 (79.6)	34 (68.0)	49 (76.6)	55 (85.9)	208 (77.0)	0.188
Item 4	8 (21.1)	13 (24.1)	9 (18.0)	4 (6.3)	7 (10.9)	41 (15.2)	0.050
Item 5	14 (36.8)	33 (61.1)	32 (64.0)	38 (59.4)	39 (61.9)	156 (58.0)	0.079
Item 6	6 (15.8)	10 (18.5)	7 (14.0)	5 (7.8)	4 (6.3)	32 (11.9)	0.199
Item 7	26 (70.3)	42 (77.8)	34 (68.0)	46 (71.9)	54 (84.4)	202 (75.1)	0.256
Item 8	4 (10.8)	6 (11.1)	10 (20.0)	10 (15.6)	7 (10.9)	37 (13.8)	0.583
Item 9	14 (37.8)	21 (38.9)	20 (40.0)	22 (34.4)	12 (19.0)	89 (33.2)	0.095
Item 10	6 (16.2)	12 (22.2)	7 (14.0)	9 (14.1)	9 (14.1)	43 (16.0)	0.724
Item 11	22 (57.9)	41 (75.9)	35 (70.0)	51 (79.7)	51 (79.7)	200 (74.1)	0.099
Item 12	11 (28.9)	31 (57.4) [†]	31 (62.0) [†]	46 (71.9) [†]	36 (56.3) [†]	155 (57.4)	<0.001
Item 13	11 (29.7)	21 (38.9)	12 (24.0)	16 (25.0)	12 (18.8)	72 (26.8)	0.158
Item 14	12 (32.4) [¶]	22 (40.7) [¶]	19 (38.0) [¶]	27 (42.2) [¶]	42 (65.6)	122 (45.4)	0.005
Item 15	26 (70.3)	44 (81.5)	37 (74.0)	56 (87.5)	49 (76.6)	212 (78.8)	0.229
Item 16	21 (56.8)	30 (55.6)	29 (58.0)	34 (53.1)	48 (75.0)	162 (60.2)	0.093
Item 17	25 (67.6)	45 (83.3)	35 (70.0)	42 (65.6)	39 (60.9)	186 (69.1)	0.110
Item 18	25 (67.6)	24 (44.4)	21 (42.0)	29 (45.3)	26 (40.6)	125 (46.5)	0.091
Item 19	13 (35.1) [§] [¶]	12 (22.2) [¶]	11 (22.0) [¶]	11 (17.2)	5 (7.8)	52 (19.3)	0.017
Item 20	8 (21.6)	18 (33.3)	12 (24.0)	9 (14.1)	9 (14.1)	56 (20.8)	0.061
Item 21	7 (18.9)	20 (37.0)	20 (40.0)	15 (23.4)	14 (21.9)	76 (28.3)	0.059
Item 22	7 (18.9) [§] [¶]	18 (33.3) [¶]	16 (32.0) [¶]	30 (46.9)	33 (51.6)	104 (38.7)	0.007
Item 23	8 (21.6) [‡] [§]	8 (14.8) [‡] [§]	26 (52.0)	27 (42.2)	18 (28.1) [‡]	87 (32.3)	<0.001
Item 24	6 (15.8)	7 (13.0)	11 (22.0)	7 (10.9)	6 (9.4)	37 (13.7)	0.342
Item 25	20 (54.1)	30 (55.6)	29 (58.0)	45 (70.3)	48 (75.0)	172 (63.9)	0.075
Item 26	6 (15.8)	5 (9.3)	16 (32.0) [‡]	18 (28.1) [‡]	15 (23.4) [‡]	60 (22.0)	0.036
Item 27	4 (10.8)	3 (5.6)	13 (26.0)	12 (18.8)	10 (15.6)	42 (15.6)	0.053
Item 28	3 (8.1) [‡] [§]	6 (11.1) [‡]	15 (30.0)	16 (25.0)	12 (18.8)	52 (19.3)	0.036

† Difference is statistically significant with 1st year of study (P<.05).

‡ Difference is statistically significant with 2nd year of study (P<.05).

‡ Difference is statistically significant with 3rd year of study (P<.05).

§ Difference is statistically significant with 4th year of study (P<.05).

¶ Difference is statistically significant with 5th year of study (P<.05).

of tooth brushing twice daily or more was 74.1% and the rate of usage dental floss regularly was 32.3% and 46.5% of the study sample put off going to the dentist until they have toothache among a group of Turkish dental students. The similar finding in this study may have been compared. This result exhibited that more dental health care education is effective and needed to improve oral health in Turkey.

Several studies^{1-3,8} reported as dental health attitudes become more positive and improved with increasing level of education. The improvement of personal oral health among dental students has shown to be linked to their dental education experience⁵ and oral health attitudes and behavior seem to increase significantly in the fourth and fifth years of dental education.⁶ In this study, statistically significant differences (P<.05) were

Table 4. Percentages and analysis of “yes” responses according to gender.

Items	Gender		Total N (%)	P value
	Female N (%)	Male N (%)		
Item 1	75 (48.1)	43 (37.7)	118 (43.7)	0.090
Item 2	136 (87.2)	94 (82.5)	230 (90.6)	0.281
Item 3	115 (73.7)	93 (81.6)	208 (77.0)	0.129
Item 4	25 (16.0)	16 (14.0)	41 (15.2)	0.653
Item 5	87 (56.1)	69 (60.5)	156 (58.0)	0.470
Item 6	16 (10.3)	16 (14.0)	32 (11.9)	0.343
Item 7	115 (74.2)	87 (76.3)	202 (75.1)	0.691
Item 8	25 (16.1)	12 (10.5)	37 (13.8)	0.187
Item 9	58 (37.7)	31 (27.2)	89 (33.2)	0.072
Item 10	23 (14.8)	20 (17.5)	43 (16.0)	0.550
Item 11	122 (78.2)	78 (68.4)	200 (74.1)	0.070
Item 12	92 (59.0)	63 (55.3)	155 (57.4)	0.542
Item 13	44 (28.4)	28 (24.6)	72 (26.8)	0.484
Item 14	63 (40.6)	59 (51.8)	122 (45.4)	0.071
Item 15	127 (81.9)	85 (74.6)	212 (78.8)	0.144
Item 16	96 (61.9)	66 (57.9)	162 (60.2)	0.503
Item 17	113 (72.9)	73 (64.0)	186 (69.1)	0.120
Item 18	78 (50.3)	47 (41.2)	125 (46.5)	0.139
Item 19	22 (14.2)	30 (26.3)	52 (19.3)	0.013*
Item 20	28 (18.1)	28 (24.6)	56 (20.8)	0.195
Item 21	46 (29.7)	30 (26.3)	76 (28.3)	0.545
Item 22	65 (41.9)	39 (34.2)	104 (38.7)	0.199
Item 23	58 (37.4)	29 (25.4)	87 (32.3)	0.038*
Item 24	19 (12.2)	18 (15.8)	37 (13.7)	0.394
Item 25	98 (63.2)	74 (64.9)	172 (63.9)	0.776
Item 26	22 (14.1)	38 (33.3)	60 (22.0)	<0.001*
Item 27	13 (8.4)	29 (25.4)	42 (15.6)	<0.001*
Item 28	18 (11.6)	34 (29.8)	52 (19.3)	<0.001*

* Difference is statistically significant P<.05

found between first and all senior years of study for brushing each of teeth carefully and cleaning the teeth well without using toothpaste. There were statistically significant differences between preclinical and clinical students for using a toothbrush which has hard bristles and having had their dentist tell that they brush very well. The results of this study confirmed that oral and dental health behavior and attitudes and also their

knowledge about oral and dental health care of dental students improved with increasing level of education in accordance with previous studies. Additionally, it was seen that responds of the students in the fourth and fifth years were mostly very similar as described by Polychronopoulou et al.⁶

In general, female dental students had better oral health attitudes and take better care of their

Table 5. Analysis between each of first 25 items which respond “yes” and last three items which respond “yes and no”.

Items	Item 26			Item 27			Item 28		
	No (N=207) N (%)	Yes (N=60) N (%)	P value	No (N=225) N (%)	Yes (N=42) N (%)	P value	No (N=215) N (%)	Yes (N=52) N (%)	P value
Item 1	101 (48.1)	17 (28.3)	0.006*	109 (48.0)	9 (21.4)	<0.001*	105 (48.4)	13 (25.0)	0.002*
Item 2	180 (85.7)	50 (83.3)	0.647	196 (86.3)	33 (78.6)	0.193	187 (86.2)	42 (80.8)	0.325
Item 3	161 (76.7)	47 (78.3)	0.787	175 (77.1)	32 (76.2)	0.899	167 (77.0)	40 (76.9)	0.996
Item 4	34 (16.2)	7 (11.7)	0.389	37 (16.3)	4 (9.5)	0.262	36 (16.6)	5 (9.6)	0.209
Item 5	120 (57.1)	36 (61.0)	0.594	130 (57.5)	26 (61.9)	0.597	122 (56.2)	34 (66.7)	0.174
Item 6	24 (11.4)	8 (13.3)	0.687	25 (11.0)	6 (14.3)	0.598	25 (11.5)	6 (11.5)	0.997
Item 7	154 (73.3)	48 (81.4)	0.208	167 (73.6)	35 (83.3)	0.179	159 (73.3)	43 (82.7)	0.158
Item 8	29 (13.8)	8 (13.6)	0.961	31 (13.7)	6 (14.3)	0.913	28 (12.9)	9 (17.3)	0.408
Item 9	68 (32.4)	21 (36.2)	0.584	74 (32.6)	15 (36.6)	0.618	72 (33.2)	17 (33.3)	0.983
Item 10	34 (16.2)	9 (15.3)	0.862	36 (15.9)	7 (16.7)	0.896	33 (15.2)	10 (19.2)	0.477
Item 11	159 (75.7)	41 (68.3)	0.250	170 (74.9)	29 (69.0)	0.428	163 (75.1)	36 (69.2)	0.385
Item 12	127 (60.5)	28 (46.7)	0.056	138 (60.8)	17 (40.5)	0.014*	134 (61.8)	21 (40.4)	0.005*
Item 13	59 (28.1)	13 (22.0)	0.353	62 (27.3)	10 (23.8)	0.638	58 (26.7)	14 (26.9)	0.977
Item 14	99 (47.1)	23 (39.0)	0.266	102 (44.9)	20 (47.6)	0.748	104 (47.9)	18 (34.6)	0.083
Item 15	167 (79.5)	45 (76.3)	0.589	180 (79.3)	32 (76.2)	0.651	170 (78.3)	42 (80.8)	0.700
Item 16	127 (60.5)	35 (59.3)	0.873	137 (60.4)	25 (59.5)	0.920	133 (61.3)	29 (55.8)	0.465
Item 17	152 (72.4)	34 (57.6)	0.030*	165 (72.9)	21 (50.0)	0.003*	162 (74.7)	24 (46.2)	<0.001*
Item 18	113 (53.8)	31 (52.5)	0.863	122 (53.7)	22 (52.4)	0.871	115 (53.0)	29 (55.8)	0.719
Item 19	39 (18.6)	13 (22.0)	0.552	42 (18.5)	10 (23.8)	0.424	40 (18.4)	12 (23.1)	0.446
Item 20	43 (20.5)	13 (22.0)	0.795	47 (20.7)	9 (21.4)	0.915	44 (20.3)	12 (23.1)	0.704
Item 21	60 (28.6)	16 (27.1)	0.827	66 (29.1)	10 (23.8)	0.486	64 (29.5)	12 (23.1)	0.356
Item 22	87 (41.4)	17 (28.8)	0.079	93 (41.0)	11 (26.2)	0.071	90 (41.5)	14 (26.9)	0.053
Item 23	67 (31.9)	20 (33.9)	0.772	73 (32.2)	14 (33.3)	0.881	69 (31.8)	18 (34.6)	0.696
Item 24	26 (12.4)	11 (18.3)	0.237	26 (11.5)	11 (26.2)	0.011*	29 (13.4)	8 (15.4)	0.704
Item 25	135 (64.3)	37 (62.7)	0.824	148 (65.2)	24 (57.1)	0.318	136 (62.7)	36 (69.2)	0.376

* Difference is statistically significant $P < .05$.

teeth than male dental students.^{14,15} This condition may be explained on the basis that females usually care more about their body and appearance. They would thus be more concerned about visiting the dentist and would tend to be more educated about their dentition even before entering a course related to dentistry.² In this study, there were statistically significant differences between females and males for only item 19 (I use a toothbrush which has hard bristles) and 23 (I do use tooth floss on regular basis). But, dental care behavior of female students such as tooth brushing twice daily or more, brushing each of the teeth carefully and usage the tooth floss regularly were better than males in this study in agreement with previous studies.^{2,14,15}

Clinical studies^{16,17} and regional health surveys have found an association between smoking and poor oral health. Millar and Locker¹⁷ reported that smokers were less likely to have visited dentist regularly. The rate of smoking among Turkish university students was found to be 49.4%.¹⁸ In this study, it was lower (22.0%) than the prevalence of smoking among the other university students. Health care providers play an important role in educating patients about the health risks of tobacco use and in promoting tobacco cessation.¹⁹ Smoking and its association with periodontitis and many other oral diseases should be clearly taught to students as they could be role models for their future patients.²⁰ In this study, statistically significant difference was found between brushing each of the teeth carefully and smoking. Non-smokers were more careful about tooth brushing. Statistically significant difference was found between using mouth wash on regular basis and smoking. Usage of mouth wash regularly was more common in smokers than non-smokers. It may be related with worries about having bad breath.

CONCLUSIONS

Oral and dental health behavior and attitudes and also their knowledge about oral and dental health care of a group of Turkish dental students improved with increasing level of education. While, oral and dental health care of female students were better than males and oral and dental health care of non-smokers were better than smokers in agreement with previous studies which were

performed in different countries. As a health care provider dental students should be a good model to their family members, friends and especially patients for oral health behavior. Further studies are needed to examine cultural differences between Turkish and other dental students in different countries.

REFERENCES

1. Nusair KB, Alomari Q, Said K. Dental health attitudes and behaviour among dental students in Jordan. *Community Dent Health* 2006;23:147-151.
2. 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.
3. Kawamura M, Spadafora A, Kim KJ, Komabayashi T. Comparison of United States and Korean dental hygiene students using Hiroshima University-Dental Behavioural Inventory (HU-DBI). *Int Dent J* 2002;52:156-162.
4. Kawamura M. Dental behavioral science-The relationship between perceptions of oral health and oral status in adults. (In Japanese). *J Hiroshima Univ Dent Soc* 1988;20:273-286.
5. Cortes FJ, Nevot C, Ramon JM, Cuenca E. The evolution of dental health in dental students at the University of Barcelona. *J Dent Educ* 2002;66:1203-1208.
6. Polychronopoulou A, Kawamura M, Athanasouli T. Oral self-care behavior among dental school students in Greece. *J Oral Sci* 2002;44:73-78.
7. Kawamura M, Honkala E, Widström E, Komabayashi T. Cross-cultural differences of self-reported oral health behavior in Japanese and Finnish dental students. *Int Dent J* 2000;50:46-50.
8. Kawamura M, Iwamoto Y, Wright FA. A comparison of self-reported dental health attitudes and behavior between selected Japanese and Australian students. *J Dent Educ* 1997;61:354-360.
9. 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.
10. Kawamura M, Yip H-K, Hu D-Y, Komabayashi T. A cross-cultural comparison of dental health attitudes and behavior among freshman dental students in Japan, Hong-Kong and West China. *Int Dent J* 2001;51:159-163.
11. Polychronopoulou A, Kawamura M. Oral self-care behavior: comparing Greek and Japanese dental students. *Eur J Dent Educ* 2005;9:164-170.

12. Kawamura M, Wright FA, Declerck D, Freire MC, Hu D-Y, Honkala E, et al. An exploratory study on cultural variations in oral health attitudes, behavior and values of freshman (first-year) dental students. *Int Dent J* 2005;55:205-211.
13. Kirtiloglu T, Yavuz US. An assessment of oral self-care in the student population of a Turkish university. *Public Health* 2006;120:953-957.
14. Ostberg AL, Halling A, Lindblad U. Gender differences in knowledge, attitude, behavior and perceived oral health among adolescents. *Acta Odontol Scand* 1999;57:231-236.
15. Al-Omari QD, Hamasha AA. Gender-specific oral health attitudes and behavior among dental students in Jordan. *J Contemp Dent Pract* 2005;6:107-114.
16. Brodeur JM, Payette M, Beniger M, Charbonneau A, Olivier M, Chabot D. Periodontal diseases among Quebec adults aged 35 to 44 years. *J Can Dent Assoc* 2001;67:34.
17. Millar WJ, Locker D. Smoking and oral health status. *J Can Dent Assoc* 2007;3:155.
18. Oksuz E, Mutlu ET, Malhan S. Characteristics of daily and occasional smoking among youths. *Public Health* 2007;121:349-356.
19. Mecklenburg RE. Tobacco prevention and control in dental practice: the future. *J Dent Educ* 2001;65:375-384.
20. Rivera-Hidalgo F. Smoking and periodontal disease. *Periodontol 2000* 2003;32:50-58.