

# Oral Health Attitudes and Behavior among a Group of Dental Students in Bangalore, India

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## ABSTRACT

**Objectives:** To evaluate self-reported oral health attitudes and behavior among a group of dental students in Bangalore, India and to compare the oral health attitudes of students of different years of dental school.

**Methods:** A self-administered questionnaire based on a modified version of the Hiroshima University Dental Behavior Inventory (HU-DBI) was administered to 250 dental students.

**Results:** Significant differences ( $P < .05$ ) were observed among students of different years in the degree of worrying about the color of the teeth, not having been to the dentist before and brushing each tooth carefully. Strongly significant differences ( $P < .001$ ) were observed among students of different years in brushing the teeth twice daily, being satisfied with the appearance of the teeth, cleaning the teeth well without toothpaste, visiting dentist only when having a toothache, taking too much time to brush their teeth, worrying about having bad breath and using mouth rinse on a regular basis.

**Conclusions:** Among dental students, the overall knowledge of oral health was good, even though there were deficits in knowledge in a few areas. The oral health attitudes and behavior of dental students improved with increasing levels of education. (Eur J Dent 2011;5:163-167)

**Key words:** Oral health; Dental students; Questions; Oral attitudes; Oral health behavior.

## INTRODUCTION

The prevention of oral disease the most accepted and efficient method for ensuring oral health.<sup>1</sup> Oral health is now recognized to be equally important in relation to general health.<sup>2</sup> The behavior of

oral health care providers and their attitudes towards their own oral health reflect not only their understanding of the importance of preventive dental procedures but also helps in improving the oral health of their patients.<sup>3</sup> Researchers have found that oral hygiene practices among dental students are different by years of study in dental school.<sup>4</sup>

Cross-country comparisons of the oral health attitudes and behavior of oral health care providers can be complicated and time consuming

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because countries having different health care systems and different languages. Hiroshima University Dental Behavior Inventory (HU-DBI) was developed by Kawamura<sup>5</sup> 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.<sup>6</sup> The HU-DBI has been translated into English, Finnish, Chinese, and Korean, and this has allowed for cross-cultural comparisons.<sup>7</sup> The English version of the HU-DBI has good test-retest reliability as well as good translated validity.<sup>8</sup>

Oral health attitudes and behavior of dental students were evaluated frequently with this scale in several countries. A study carried out among a group of Turkish dental students reported that more dental health care education is effective and needed to improve oral health in Turkey.<sup>3</sup> The study carried out to assess dental attitudes and behavior among dental students in Jordan reported that the oral health attitude and behavior in Jordan was poor.<sup>4</sup> Kawamura et al reported that significant cultural differences in oral health attitudes, behavior and values were found in the freshman dental students from Japan, Hong Kong and Western China.<sup>5</sup> A study comparing Japanese and Finnish dental students reported that the Japanese dental students in their final year appeared to have better oral health behavior, as estimated by the HU-DBI than their Finnish peers did.<sup>9</sup> Another study that explored the cross-cultural differences in the self-reported oral health behavior between Greek and Japanese dental students concluded that there were considerable differences in dental health attitudes/behavior between the students in the two countries, reflecting the different cultures and the health education systems.<sup>10</sup>

However, there is insufficient data, on oral health attitudes and behavior among dental students in Bangalore, India. The purpose of this study was to evaluate the self-reported oral health attitudes and behavior among a group of dental

students in Bangalore, India and to compare oral health attitudes among students in different years of study in dental school.

## MATERIALS AND METHODS

This study was conducted at the M.R Ambedkar Dental College and Hospital, Bangalore, India during the academic year September-October 2008. Two hundred and fifty students, with 50 students each from the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years of school participated in this study. Participation was voluntary, and all the participants were queried anonymously. A modified English version of the HU-DBI survey (Table 1), which consists of fifteen dichotomous responses (yes-no) was used in this study. The questionnaires were collected in person immediately after completion.

The data were tabulated and analyzed. SPSS v.15.0 (SPSS Inc., Chicago, IL, USA) was used for analysis of the data. Chi-square tests were used to compare the oral health attitudes and behavior among dental students in the different years of study. Analyses of variance were used to compare the mean levels of awareness in subjects from each school year. A P-value less than 0.05 was considered statistically significant, and a P-value less than 0.001 was considered strongly significant.

## RESULTS

A total of 250 dental students from the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years participated in the study. Sample description by year of study is given in Table 2.

The percentages of “yes” responses according to years of study are shown in Table 3. Out of 15

Table 1. A modified English version of HU-DBI survey used in our study.

Items
1. I worry about the color of my teeth.
2. I had been to a dentist office before.
3. My gums tend to bleed when I brush my teeth.
4. I brush my teeth twice daily.
5. I am bothered by the color of my gums.
6. I brush each of my teeth carefully.
7. I have noticed some white sticky deposits on my teeth.
8. I am satisfied with the appearance of my teeth.
9. I think I can clean my teeth well without using toothpaste.
10. I put off going to the dentist until I have toothache.
11. I feel I sometimes take too much time to brush my teeth.
12. I don't feel I have brushed well unless I brush with strong strokes.
13. I do use tooth floss on regular basis.
14. I worry about having bad breath.
15. I do use mouthwash on regular basis.

questions, 10 questions showed significant differences by year.

No significant differences were observed by year of study for having bleeding gums while brushing (Q3), bothering about the color of the gums (Q5), noticing some white sticky deposits on the teeth (Q7), feeling that brushing was not done

well unless done with strong strokes (Q12) and using floss on a regular basis (Q 13).

Significant differences ( $P<.05$ ) were observed between by year of study for worrying about the color of the teeth (Q1), not having been to the dentist before (Q2) and brushing each tooth carefully (Q6).

Table 2. Sample description by year of study.

Class	Number of sample	Percentage of sample
1 <sup>st</sup> year	50	20%
2 <sup>nd</sup> year	50	20%
3 <sup>rd</sup> year	50	20%
4 <sup>th</sup> year	50	20%
5 <sup>th</sup> year	50	20%

Table 3. Percentages and analysis of yes- no responses according to years of study.

Question	Correct response	Total (n=250)	1 <sup>st</sup> year (n=50)	2 <sup>nd</sup> year (n=50)	3 <sup>rd</sup> year (n=50)	4 <sup>th</sup> year (n=50)	5 <sup>th</sup> year (n=50)	P value
Q1	No	40 (16%)	15 (30%)	6 (12%)	9 (18%)	5 (10%)	5 (10%)	*
	Yes	210 (84%)	35 (70%)	44 (88%)	41 (82%)	45 (90%)	45 (90%)	
Q2	No	171 (68.4%)	36 (72%)	41 (82%)	30 (60%)	36 (72%)	28 (56%)	*
	Yes	79 (31.6%)	14 (28%)	9 (18%)	20 (40%)	14 (28%)	22 (44%)	
Q3	No	216 (86.4%)	46 (92%)	46 (92%)	41 (82%)	43 (86%)	40 (80%)	0.263
	Yes	34 (13.6%)	4 (8%)	4 (8%)	9 (18%)	7 (14%)	10 (20%)	
Q4	No	66 (26.4%)	15 (30%)	1 (2%)	17 (34%)	21 (42%)	12 (24%)	**
	Yes	184 (73.6%)	35 (70%)	49 (98%)	33 (66%)	29 (58%)	38 (76%)	
Q5	No	193 (77.2%)	38 (76%)	38 (76%)	36 (72%)	40 (80%)	41 (82%)	0.786
	Yes	57 (22.8%)	12 (24%)	12 (24%)	14 (28%)	10 (20%)	9 (18%)	
Q6	No	218 (87.2%)	46 (92%)	45 (90%)	46 (92%)	36 (72%)	45 (90%)	*
	Yes	32 (12.8%)	4 (8%)	5 (10%)	4 (8%)	14 (28%)	5 (10%)	
Q7	No	226 (90.4%)	44 (88%)	49 (98%)	47 (94%)	41 (82%)	45 (90%)	0.069
	Yes	24 (9.6%)	6 (12%)	1 (2%)	3 (6%)	9 (18%)	5 (10%)	
Q8	No	105 (42%)	33 (66%)	36 (72%)	26 (52%)	4 (8%)	6 (12%)	**
	Yes	145 (58%)	17 (34%)	14 (28%)	24 (48%)	46 (92%)	44 (88%)	
Q9	No	164 (65.6%)	46 (92%)	50 (100%)	35 (70%)	23 (46%)	10 (20%)	**
	Yes	86 (34.4%)	4 (8%)	0 (0%)	15 (30%)	27 (54%)	40 (80%)	
Q10	No	80 (32%)	17 (34%)	33 (66%)	17 (34%)	9 (18%)	4 (8%)	**
	Yes	170 (68%)	33 (66%)	17 (34%)	33 (66%)	41 (82%)	46 (92%)	
Q11	No	144 (57.6%)	34 (68%)	15 (30%)	32 (64%)	39 (78%)	24 (48%)	**
	Yes	106 (42.4%)	16 (32%)	35 (70%)	18 (36%)	11 (22%)	26 (52%)	
Q12	No	132 (52.8%)	32 (64%)	29 (58%)	23 (46%)	29 (58%)	19 (38%)	0.063
	Yes	118 (47.2%)	18 (36%)	21 (42%)	27 (54%)	21 (42%)	31 (62%)	
Q13	No	211 (84.4%)	39 (78%)	43 (86%)	43 (86%)	43 (86%)	43 (86%)	0.746
	Yes	39 (15.6%)	11 (22%)	7 (14%)	7 (14%)	7 (14%)	7 (14%)	
Q14	No	60 (24%)	21 (42%)	8 (16%)	17 (34%)	6 (12%)	8 (16%)	**
	Yes	190 (76%)	29 (58%)	42 (84%)	33 (66%)	44 (88%)	42 (84%)	
Q15	No	113 (45.2%)	30 (60%)	28 (56%)	28 (56%)	19 (38%)	8 (16%)	**
	Yes	137 (54.8%)	20 (40%)	22 (44%)	22 (44%)	31 (62%)	42 (84%)	

\*:  $P<.05$ , \*\*:  $P<.001$

Strongly significant differences ( $P<.001$ ) were seen by year of study for brushing teeth twice daily (Q4), being satisfied with the appearance of the teeth (Q8), cleaning the teeth well without toothpaste (Q9), visiting the dentist only when having a toothache (Q10), taking too much time to brush teeth (Q11), worrying about having bad breath (Q14) and using mouth rinse on a regular basis (Q15).

The total knowledge score by each year of study is given in Table 4.

## DISCUSSION

Dental students should be a good example of positive oral health attitudes and behavior to their families, patients and friends. In general, they have been found to be motivated about maintaining a good oral health. Self reported oral hygiene practices among Indian dental students and differences by year of study were evaluated.

About 84% of the dental students were concerned about the color of their teeth compared to 67% of Jordanian dental students.<sup>4</sup> Only 14% of dental students had bleeding gums which was a higher proportion than found among Australian dental students (6%) and a lower proportion than found among Finnish (45%) and Japanese (25%) dental students.<sup>9</sup> This showed that the students in this study paid good attention to their oral hygiene maintenance and were also very much concerned about esthetics.

In accordance with other studies, 74% of students brushed their teeth twice daily.<sup>12</sup> The percentage in this sample is higher than that reported from Kuwait and Jordan where only one- third and two- thirds of the students brushed their teeth twice a day respectively.<sup>4</sup>

Only 13% of the dental students brushed each of their teeth carefully, which was a much smaller proportion than that in Finnish (78%) Japanese (55%) dental students.<sup>9</sup> Only 10% of the sample

noticed white sticky deposits on their teeth. Students gave less importance to individual tooth maintenance. This suggests that the level of student's self-care may have been influenced by their course contents.

In Sweden, the results from a questionnaire-based study showed that about 59% of the subjects were satisfied with the appearance of their teeth.<sup>4</sup> However in the present study, 58% of the students were satisfied with the appearance of their teeth. Among students 34% of the students thought they were able to clean their teeth well without toothpaste.

Only 32% of the students had visited a dentist previously. This proportion was much lower than the 86% among Jordanian students. About 68% of dental students put off going to the dentist until they had a toothache. Similar frequencies were seen among dental students in Japan (56%), Hong Kong (67%), Korea (65%), and China (64%). The Asian ways of dealing with health and disease are different from traditional western concepts in that most of the health beliefs and practices are learnt and practiced in the home, and professional help is sought only when home remedies fail. The strong reliance on self-care may on the one hand undermine the effectiveness of organized oral health care by delaying dental visits or on the other hand make these unnecessary.<sup>5</sup>

About 42% of the dental students felt they took too much time to brush their teeth while 47% of the dental students felt they did not brush well unless using strong strokes. This was higher than the percentage among the Finnish dental students (12%).<sup>9</sup> Only 16% of the students used dental floss on a regular basis. About 76% of dental students worried about having bad breath compared to 60% of Jordanian students<sup>4</sup> and 55% used mouth rinse on a regular basis. Awareness regarding the use of dental floss was low among students in this study and the percentage of those reporting the use of rinse was also low. Among all students, those in the 4<sup>th</sup> and 5<sup>th</sup> years were the majority who used it. This can be explained by the fact that the basic course in clinical periodontology starts in the third year.

Overall the knowledge among the dental students in this study was good although they had deficits in knowledge in a few areas. Oral health education needs to be provided in those areas

Table 4. Total knowledge score in each year.

Class	Total knowledge score
1 <sup>st</sup> year	6.88±1.69
2 <sup>nd</sup> year	7.32±1.63
3 <sup>rd</sup> year	8.25±2.00
4 <sup>th</sup> year	9.28±1.94
5 <sup>th</sup> year	11.36±2.16
Significance	F=44.786; P<.001**

where there are deficits in knowledge, the dental students in our study were lacking in knowledge of the use of dental floss, the proper force and technique of brushing and the use of disclosing solutions to identify deposits on the teeth.

Strongly significant differences ( $P < .001$ ) were seen by year of study for brushing each tooth carefully, being satisfied with the appearance of teeth, cleaning the teeth well without toothpaste, visiting a dentist only when having a toothache, brushing the teeth twice daily, worrying about having bad breath and using mouth rinse on a regular basis.

In accordance with several studies the results of this study confirmed that oral health attitudes and behavior improved with increasing levels of education.<sup>11, 13-15</sup> This improvement in personal oral health among dental students has been shown to be linked to their dental education experience.<sup>16</sup> Oral health attitudes and behavior seem to increase significantly in the fourth and fifth years of dental education. Additionally, the responses of the students in the fourth and fifth years were very similar.<sup>17</sup>

## CONCLUSIONS

In this study the overall knowledge of oral health behaviors among the dental students was good, even though there were deficits in their knowledge in a few areas. The oral health attitudes and behavior of dental students improved with increasing level of education.

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