

## To Evaluate Self-Reported Oral Health Attitudes, Behavior and to Compare the Oral Health Attitudes among Students of Different Years of a Dental School in South-India

Seenivasan Madhan Kumar, Karthigeyan Jeyapalan, Uma Maheswari Mani, Parthasarathy Natarajan, Shanmuganathan Natarajan and V. Anand Kumar

Department of Prosthodontics, Faculty of Dental Sciences,  
Sri Ramachandra Medical College and Research Institute (DU), India.  
\*Corresponding author E-mail: madhankumar.s@sriramachandra.edu.in

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To evaluate self-reported oral health attitudes, behavior and compare the oral health attitudes among a group of dental students of different years in India. Four hundred dental students from first year to internship of the undergraduate dental course of Faculty of Dental Sciences, Sri Ramachandra Medical College and Research Institute, Chennai were surveyed and a modified HU-DBI survey was administered to all of them. The questionnaire consists of 28 questions with yes or no responses, where the first 25 questions were related to oral health attitudes and the last three questions dealt with smoking habits of the subjects. The responses were tabulated and statistically analyzed using IBM SPSS software version 19.0. Highly significant results were obtained with respect to oral hygiene in both males and females indicative of good oral hygiene practices. The general trends for answering indicate that both males and female dental students showed a high degree of awareness and competence in all four sub sections of the questionnaire, namely oral health attitude, oral hygiene, self-reported oral health and smoking. This result was highly significant for most questions. Dental hygiene and dental hygiene practices among dental students in this South Indian population show an improvement among dental students from year to year. No significant differences were seen between male and female dental students.

**Keywords:** HU-DBI, Dental students, Oral Hygiene, Dental Awareness, Oral-Health Education, Gingival Bleeding.

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Timely dental care plays a critical role in prevention of dental disease; an awareness of possible dental problems and the means in which to prevent and control them are necessary for overall dental health. Despite the fact that preventive dentistry has evolved in recent years, the role of patient awareness and motivation for the prevention of dental diseases should not be underestimated. Studies have acknowledged that more work ought

to be coordinated towards increasing the awareness and oral wellbeing instruction level about caries and periodontal ailments among the populace<sup>1</sup>. The degree of dental awareness depends on the cultural and socioeconomic background of the individual as well as a myriad of other factors. The degree and type of education also affects the perception of an individual and hence the dental awareness of the person. The American Dental Association suggests

that, to elude oral diseases, an individual should brush and floss at any rate once every day and visit a dental practitioner routinely<sup>2</sup>. Dental flossing and tooth brushing are simply the most regularly performed oral care conduct<sup>3</sup>. Lee *et al* expressed that understanding the social importance of dental infection is basic to changing the beliefs and attitudes of individuals with a specific end goal to enhance oral health of the communal population<sup>4</sup>. Dental students, the dentists of tomorrow will have a dynamic role in oral health education and promotion<sup>5,6,7</sup>. The primary purpose of this study was to evaluate self-reported oral health attitudes, behavior and compare the oral health attitudes among a group of dental students of different years in India. The study was performed at Faculty of Dental sciences, Sri Ramachandra University. The dental undergraduate course syllabus in Sri Ramachandra University consists of four years with an annual examination pattern. The maximum number of subjects for examination is in final year where students have to appear for examination for 8 subjects accompanied with practical examination. This is followed by a one year compulsory rotating internship.

## MATERIALS AND METHOD

Four hundred dental students from first year to internship of the undergraduate dental course studying in Faculty of Dental Sciences, Sri Ramachandra Medical College and Research Institute, Chennai were surveyed. A modified HU- DBI survey was administered to all students including the ones undergoing internship of the same course. Prior to the administration of the questionnaire, necessary ethical clearance was obtained for the same. The HU-DBI survey (Hiroshima University Dental Behavior Inventory) was developed by Kawamura<sup>8</sup>. Higher scores demonstrate a superior oral health attitude and behaviour<sup>9</sup>. The questionnaire consists of 28 questions with yes or no responses, where the first 25 questions were related to oral health attitudes and the last three questions dealt with smoking habits of the subjects. The administered questionnaire was in English and was answered by the students in the lecture class. Studies have shown that English version of the test has good translation reliability<sup>10</sup>.

The responses were analyzed using IBM SPSS software version 19.0. Responses from different years of study for each question were analyzed using Kruskal Wallis test and Mann Whitney U test was used to analyze differences in gender. Chi squared test was performed for analysis for the first 25 items and the last 3 items.

## RESULTS

A total of 400 students were surveyed for the purpose of this study. The percentage of “yes” and “no” responses were analysed and tabulated in Table 1 and Table 2 for gender and different years of students respectively

The questions were divided into four categories. Category 1 was oral health attitude. Category 2 was oral hygiene behavior. Self-reported health and smoking were Category 3 and 4 respectively.

Figure 1 is a measure of smoking frequency over the five years. It shows that there is an increase in smokers from first year to internship with a marked increase in internship. The maximum number of persons who had been smokers for more than 1 year was also the maximum in the internship.

Figure 2 shows the use of mouthwash and flossing among the five years. It shows an increase in use of mouthwash and dental floss from first year to internship. This is indicative of an improvement in dental awareness from first year to internship.

Figure 3 shows brushing habits of students. There is an improvement from year to year of the brushing habits of students. This is seen to be inversely proportional to professional education on correct brushing technique.

Self-reported incidence of plaque deposits, halitosis and gingival bleeding shows a decrease from first year to third year followed by a marked increase in final year and a decrease again in internship (Figure 4).

Figure 5 shows an increase in frequency of visits to dentist from first year to internship. There is also a decrease in visits to dentists' clinic only in case of emergencies. This shows an increased tendency for more regular check-ups rather than for emergency care only.

Figure 6 shows the pattern of answering by the males and females for each question. It was seen that high significance was seen in many

questions. Both males and females showed a marked negative response to oral hygiene questions indicating a highly significant degree of oral hygiene practices. When participants were asked, if they worry about the color of their teeth 64% females and 60.8% answered no. When asked if they worry about the color of their gums 66.4%

females 63.9% males answered no. This was also seen to be highly significant.

In terms of self-reported oral hygiene behavior, highly significant results were obtained with respect to oral hygiene in both males and females indicative of good oral hygiene practices. It was seen that female students worried

**Table 1.** Percentage of Yes or No responses for the questions among males and females

Item		Females X <sup>2</sup> (n=214)		P- value	Males (n=97)	X <sup>2</sup>		P- value		
		No.	%			No.	%			
7	I worry about the color of my teeth	No	137	64%	16.822	0.000	59	60.8%	4.546	0.033
		Yes	77	36%			38	39.2%		
8	I am bothered by the color of my gums	No	142	66.4%	22.879	0.000	62	63.9%	7.515	0.006
		Yes	72	33.6%			35	36.1%		
9	I think that I cannot help having false teeth when I am old	No	113	52.8%	0.673	0.412	49	50.5%	0.010	0.919
		Yes	101	47.2%			48	49.5%		
14	I think I can clean my teeth well without using toothpaste	No	175	81.8%	86.430	0.000	69	71.1%	17.330	0.000
		Yes	39	18.2%			28	28.9%		
16	I worry about having bad breath	No	122	57%	4.206	0.040	53	54.6%	0.835	0.361
		Yes	92	43%			44	45.4%		
17	It is impossible to prevent gum disease with tooth brushing alone	No	82	38.3%	11.682	0.001	35	36.1%	7.515	0.006
		Yes	132	61.7%			62	63.9%		
20	I feel I sometimes take too much time to brush my teeth	No	143	66.8%	24.224	0.000	56	57.7%	2.320	0.128
		Yes	71	33.2%			41	42.3%		
21	I don't feel I've brushed well unless I brush with strong strokes	No	132	61.7%	11.682	0.001	62	63.9%	7.515	0.006
		Yes	82	38.3%			35	36.1%		
5	I have noticed some white sticky deposits on my teeth	No	156	72.9%	44.879	0.000	71	73.2%	20.876	0.000
		Yes	58	27.1%			26	26.8%		
11	I brush each of my teeth carefully	No	80	37.4%	13.626	0.000	35	36.1%	7.515	0.006
		Yes	134	62.6%			62	63.9%		
12	I brush my teeth twice daily or more	No	93	43.5%	3.664	0.056	46	47.4%	0.258	0.612
		Yes	121	56.5%			51	52.6%		
15	I often check my teeth in mirror after brushing	No	49	22.9%	62.879	0.000	28	28.9%	16.667	0.000
		Yes	165	77.1%			68	70.1%		
19	I use a toothbrush which has hard bristles	No	173	80.8%	81.421	0.000	71	73.2%	20.876	0.000
		Yes	41	19.2%			26	26.8%		
23	I do use mouth wash on regular basis	No	171	79.9%	76.561	0.000	72	74.2%	22.773	0.000
		Yes	43	20.1%			25	25.8%		
24	I do use tooth floss on regular basis	No	134	86.4%	13.626	0.000	50	51.5%	0.093	0.761
		Yes	80	13.6%			47	48.5%		
4	My gums bleed when I brush my teeth	No	185	86.4%	113.720	0.000	85	87.6%	54.938	0.000
		Yes	29	13.6%			12	12.4%		
10	I think my teeth are getting worse despite my daily brushing	No	160	74.8%	52.505	0.000	71	73.2%	20.876	0.000
		Yes	54	25.2%			26	26.8%		
18	I put off going to the dentist until I have toothache	No	124	57.9%	5.402	0.020	54	55.7%	1.247	0.264
		Yes	90	42.1%			43	44.3%		
25	I am satisfied with the appearance of my teeth	No	75	35%	19.140	0.000	34	35.1%	8.670	0.003
		Yes	139	65%			63	64.9%		
26	I have been smoking for more than one year	No	207	96.7%	186.916	0.000	71	73.2%	20.876	0.000
		Yes	7	3.3%			26	26.8%		
27	I smoke more than 10 cigarettes per day	No	213	99.5%	210.019	0.000	78	80.4%	35.887	0.000
		Yes	1	0.5%			19	19.6%		
28	I am a smoker	No	212	99.1%	206.075	0.000	71	73.2%	20.876	0.000
		Yes	2	0.9%			26	26.8%		

significantly about having bad breath whereas no such significance existed among males. A majority of males and females reported that they do not floss with this value being highly significant in females.

With regards to smoking, a majority of both males and females answered that they do not smoke with high significance among both males and females.

**Table 2.** Percentage of Yes or No responses for the questions among different years of students

Question	Correct Response	Total (n=311)	1 <sup>st</sup> Year (n=71)	2 <sup>nd</sup> Year (n=47)	3 <sup>rd</sup> Year (n=44)	4 <sup>th</sup> Year (n=74)	Interns (n=75)	P-Value
7	No	196 (63.02%)	36	21	32	51	56	0.001
	Yes	115 (36.97%)	35	26	12	23	19	
8	No	204 (65.59%)	51	30	36	42	45	0.040
	Yes	107(34.4%)	20	17	8	32	30	
9	No	162 (52.09%)	31	29	29	31	42	0.031
	Yes	149 (47.90%)	40	18	15	43	33	
14	No	244 (78.45%)	64	43	41	62	34	0.000
	Yes	67 (21.54%)	7	4	3	12	41	
16	No	175 (56.27%)	32	19	28	32	64	0.000
	Yes	136 (43.72%)	39	28	16	42	11	
17	No	117 (37.62%)	28	13	19	29	28	0.601
	Yes	194 (62.37%)	43	34	25	45	47	
20	No	199 (63.98%)	43	23	33	49	51	0.092
	Yes	112 (36.01%)	28	24	11	25	24	
21	No	194 (62.37%)	39	28	29	47	51	0.538
	Yes	117 (37.62%)	32	19	15	27	24	
5	No	227 (72.99%)	49	33	32	53	60	0.610
	Yes	84 (27.00%)	22	14	12	21	15	
11	No	115 (36.97%)	28	18	21	31	17	0.045
	Yes	196 (63.02%)	43	29	23	43	58	
12	No	139 (44.69%)	32	23	24	33	27	0.359
	Yes	172 (55.30%)	39	24	20	41	48	
15	No	77 (24.75%)	15	11	8	18	25	0.308
	Yes	233 (74.91%)	56	36	36	56	49	
19	No	244 (78.45%)	50	34	38	59	63	0.146
	Yes	67 (21.54%)	21	13	6	15	12	
23	No	243 (78.13%)	59	34	37	55	58	0.475
	Yes	68 (21.86%)	12	13	7	19	17	
24	No	184 (59.16%)	42	32	25	46	39	0.475
	Yes	127 (40.83%)	29	15	19	28	36	
4	No	270 (86.81%)	63	37	35	68	67	0.134
	Yes	41 (13.18%)	8	10	9	6	8	
10	No	231 (74.27%)	54	36	37	56	48	0.153
	Yes	80 (25.72%)	17	11	7	18	27	
18	No	178 (57.23%)	25	22	27	42	62	0.000
	Yes	133 (42.76%)	46	25	17	32	13	
25	No	109 (35.04%)	26	23	16	25	19	0.123
	Yes	202 (64.95%)	45	24	28	49	56	
26	No	278 (89.38%)	70	43	42	65	58	0.001
	Yes	33 (10.61%)	1	4	2	9	17	
27	No	291 (93.56%)	71	41	42	70	67	0.031
	Yes	20 (6.43%)	0	6	2	4	8	
28	No	283 (90.99%)	70	41	42	68	62	0.010
	Yes	28 (9.0%)	1	6	2	6	13	

The individual percentages of those who answered no were more in case of females.

The general trends for answering indicate that both males and female dental students showed a high degree of awareness and competence in all four sub sections of the questionnaire, namely oral health attitude, oral hygiene, self-reported oral health and smoking. This result was highly significant for most questions. When the oral health attitude was evaluated, it was seen that males and female answered similarly for most questions such as, worrying about the color of their teeth, (39.2% and 36% respectively) and color of their gums(36.1% and 33.6% respectively).

With regards to oral hygiene practices such as flossing, 13.6% of females said they floss regularly as compared to 48.5% of males who answered positively for this question. This is contrary to the results of other studies which indicate better oral hygiene practices in women. When the students were asked if they smoke

more than ten cigarettes per day only .5% of girls answered “yes” while 19.6% of boys answered this question with a “yes”. Similarly, 0.9% of girls were found to be smokers as compared with 26.8% of boys.

### DISCUSSION

The oral health attitude and practices of upcoming dentists can influence the conduct of their relatives and non-dental associates. It is essential that this mentality is developed from the earliest starting point, diverse cultural comparison is imperative as contrasts may exist in the financial status, dental conveyance framework and disposition towards dental wellbeing.<sup>11,12</sup>. The dental students of the faculty of dental sciences of Sri Ramachandra University are a good representative sample of dental students as a whole in south India. It accepts students from different parts of India. The study took into

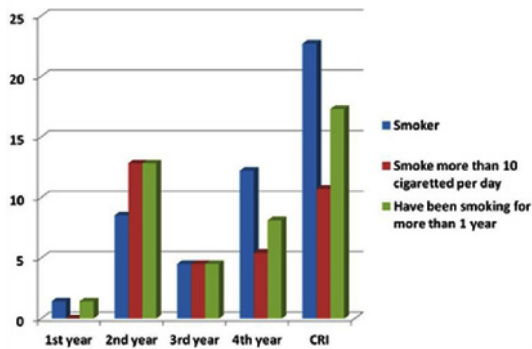


Fig. 1. Frequency of smoking among different years of students

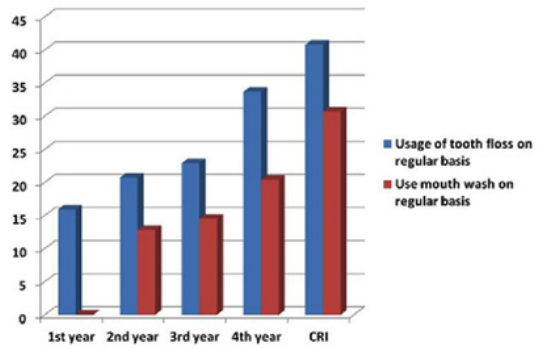


Fig. 2. Use of floss and mouthwash among different years of students

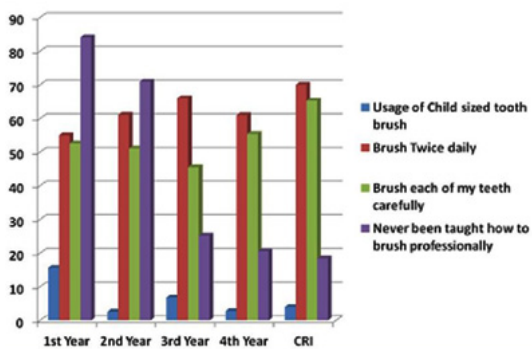


Fig. 3. Brushing habits

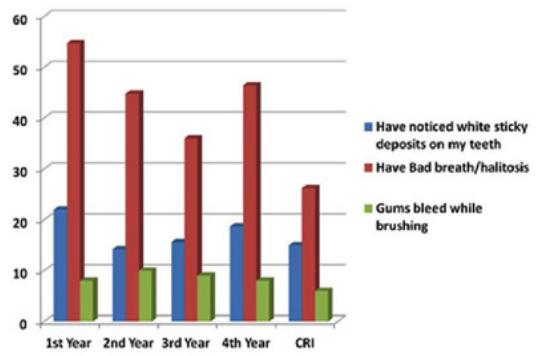
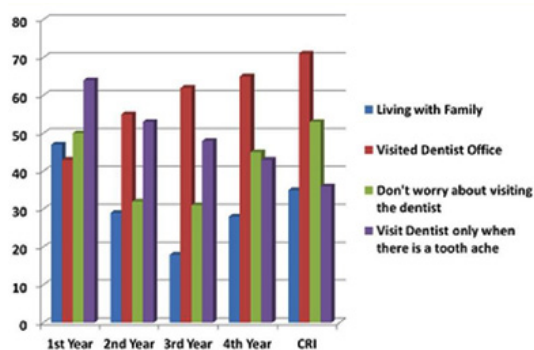


Fig. 4. Self-reported incidence of plaque deposits, halitosis and gingival bleeding



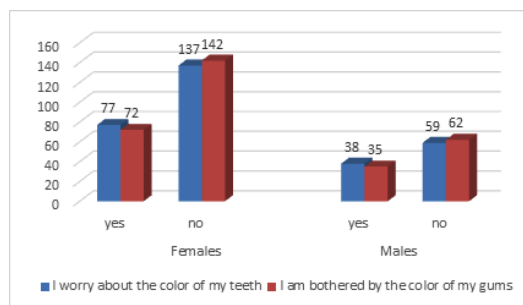
**Fig. 5.** Frequency of visits to dentist among different years of students

account the change in dental awareness across the different years of study. It will also help assess the differences in dental awareness between males and females. The study has not been done in this cultural setting before.

The study also evaluates the difference in oral hygiene behaviors between males and females. Earlier research has shown that females generally have better oral health practices as compared to males<sup>13,14</sup>. With regards to studies of the oral health behavior of senior dental students<sup>15</sup> no gender differences were observed, probably because of the effect of professional training<sup>16</sup>. A similar result was obtained in this current study thereby verifying results from other cultural setting. This result was however contrary to results obtained by Al-Omari *et al* in Jordan which reported a significant difference between the sexes<sup>17</sup>. However with regards to flossing, 13.6% of females said they floss regularly as compared to 48.5% of males who answered positively for this question. This is contrary to the results of other studies which indicate better oral hygiene practices in women.

This study showed an improvement in oral health manifested by an increase in use of mouthwash and dental floss from first year to internship. There is an increase in frequency of visits to dentist from first year to internship. There is also a decrease in visits to dentists' clinic only in case of emergencies. This shows an increased tendency for more regular check-ups rather than for emergency care only.

Self-reported incidence of plaque deposits, halitosis and gingival bleeding shows a decrease from first year to third year followed by a marked increase in final year and a decrease again



**Fig. 6.** Pattern of answering by the males and females for each question

in internship. This may be attributed to an increase in stress level due to the examination pattern and heavy work load associated with final year.

An area of concern is that there is an increase in smokers from first year to internship with a marked increase in internship. The maximum number of persons who had been smokers for more than 1 year was also the maximum in the internship. This is an alarming problem that must be addressed to preserve the oral and general health of our students.

With regards to the differences between the answering patterns of males and females, it was seen that for most questions, with a few exceptions no significant differences existed between the males and females and most answers indicated a high degree of awareness and sound oral hygiene practices among dental students.

Takashi Komabayashi *et al's* study comparing the dental students of Britain and China revealed that 29% of Chinese students believed that wearing dentures in old age is inevitable, but only 7% of British students felt so<sup>18</sup>. In the current study however, it was seen that 47.2% felt it was inevitable. Furthermore, 80% of Chinese students agreed that it was difficult to counteract gum ailment with tooth brushing alone, while 30% of British students trusted so. The current study revealed 62.37% agreed it was difficult to stay away from gum infection.

Only 5% of British dental students agreed with the problem of bleeding gums during brushing, compared to 31% of Chinese dental students. The current study reported approximately 13%. Furthermore, responses for seeking dental care only when symptoms arise were found to

be 54% for Chinese students and 13% for British students<sup>18</sup>. The current study revealed this figure to be 43% in the Indian population.

In a study conducted among 757 dental students at the Dental Faculty, Istanbul University, only 11% of the total students agreed getting false teeth in old age cannot be avoided. In the current study however, it was seen that 47.2% felt it was inevitable. 67% students reported believed that it is impossible for tooth brushing alone to prevent gum disease<sup>19</sup>, however 62.37% believed so in the current study. Only 6% said they were concerned about the color of their gums, in contrast to 52% in the current study.

There is also an age related improvement in oral hygiene from first year to final year. This can be attributed to an increase in awareness and dental education level. This also correlated with results obtained from a study by Dagli *et al*<sup>20</sup>. These findings were in contrary to studies done for Greek, Japanese, Finnish and Chinese dental students<sup>21,22,23</sup>. A good awareness to self-oral health in a dental student will directly affect the dental instruction conferred to the patient by them.

### CONCLUSION

Dental hygiene and dental hygiene practices among dental students in this South Indian population show an improvement among dental students from year to year. No significant differences were seen between male and female dental student

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