

## Influence of Dental Education on Oral Health Attitude and Behavior of 1<sup>st</sup> Year Dental Students through Interns

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### Abstract

**Objective:** The aim of the present study was to assess the influence of dental education on oral health attitude and behavior of the dental students.

**Methods:** This cross sectional study was conducted among dental students using Hiroshima University - Dental Behavioral Inventory (HU-DBI) questionnaire written in English and validated through a pilot survey including 20 questions with agree/disagree responses along with information pertaining to level of education. The data was analyzed using the Statistical Package for Social Science (SPSS) version 16.0 software.

**Results:** The total number of participants was 384 comprising of 314 (81.8%) girls and 70 (18.2%) boys. It was found that girls had higher scores of attitude regarding oral health as compared to boys. Regarding educational status, the level of attitude and behavior improved significantly with advancing years of education ( $p = 0.000$ ).

**Conclusion:** The study revealed positive changes in oral health attitude and behavior among participants and its relation to education, But still more preventive behavior among the students is required.

**Keywords:** Hiroshima University-Dental Behavioral Inventory; Dental Education; Attitude; Behavior

### Introduction

Health is a universal human need for all cultural groups. General health cannot be attained or maintained without oral health. The mouth is regarded as the mirror of the body and the gateway to good health [1]. Oral health represents an important attribute of overall health and well being; oral diseases remain the most prevalent problems in the society. Attitudes towards oral health determine the condition of the oral cavity. The behavior of oral health providers and their attitudes towards their oral health could affect their capacity to deliver oral health care and thus might affect the oral health of their patients [2]. The dental institutions are an integral part of the oral health care system in India. They help train the future professionals and expand scientific knowledge through research [3].

Dental students are the future leaders in oral health care and are expected to be teachers of oral hygiene as well as role models of self-care regimens for their patients as their dental education progresses [4]. Dental professionals have assimilated the knowledge and feel a sense of personal control over their oral health, are more likely to adopt self-care behavior. The health beliefs and attitudes of dental students, as future dental health providers, not only affects their oral-self care habits but also potentially influence their patient's ability to take care of their teeth and shape the public's oral health education level [5,6]. So, the dental students should be able to be an oral health model for the society.

Many previous studies on dental students have shown that the oral health attitudes and behaviors differed between preclinical and clinical years of training [7] and it also differed among different cultures and countries [8]. Moreover, these varied among the students pursuing different training programs in dentistry, dental hygiene, dental technician and pharmacy. Clearly such studies are of paramount importance as the present global trend of standardization of dental education requires inclusion of oral health promotion in dental practice [9]. It is critical to evaluate yearly progress of dental students learning about self-care regimens such as oral health attitudes and behavior [4]. Therefore, the present study is conducted to evaluate the influence of formal dental education on oral health knowledge, attitude and behavior among dental students.

### Materials and Methods

All dental students from Luxmi Bai Institute of Dental Sciences and Hospital, Patiala were asked to participate in this survey using HU-DBI questionnaire written in English and validated through a pilot survey, at the beginning of the academic year 2014-2015. Permission to conduct the survey was obtained from the Head of the Institute. All the students were requested to remain in the class at the end of a lecture hall to participate in the survey.

The Hiroshima University-Dental Behavioral Inventory (HU-DBI), developed by Kawamura [2] has been used to examine the oral health-related attitudes and behavior of dental students consisting of 20 questions with "agree/disagree" responses along with information pertaining to level of education. The students were asked to respond to each item according to the response format provided in the questionnaire. The students received a full explanation of how to fill in the questionnaire. The students were asked to fill in the questionnaire without discussion in an average of 20 minutes. All the students who were willing to participate were included in the study and those who were absent on the day of visit and left their questionnaire unattempted were excluded from the study.

For the statistical analysis each correct answer was given score "one" and wrong answer was given score "zero" in the items included in knowledge, attitude and behavior questions. The data was analyzed using the Statistical Package for Social Science version 16.0 software. Descriptive statistics were obtained and mean percentage scores, standard deviation, and frequency distribution were calculated. Student's T-test was used to generate data according to gender and ANOVA test analyzed the results according to different years of graduation.

### Results

The total number of students was 384 comprising of 314 (81.8%) girls and 70 (18.2%) boys. Furthermore the study participants were categorized according to age and different professional years (Graph 1 and 2).

In the present study, it was found that girls had higher scores of attitude and behavior regarding oral health as compared to boys as mentioned in Table 1. Regarding educational status, almost the level of attitude and behavior of students improved significantly with advancing years of education ( $p = 0.000$ ) as illustrated in Table 2.

Table 3 unfolds the distribution of the "Agree" responses and compares the responses by gender. Overall 59.2% of girls and 55.7% of boys agreed with not worrying much about visiting the dentist. Around 10% of the participants both girls and boys complained of bleeding gums while brushing their teeth. A high percentage of girls and boys were worried about the color of their teeth and gums with 85.0% and 81.4% respectively, responding positively to the question as most of them used to check their teeth in mirror after brushing. Among the total respondents, less than 10% of them have the habit of using child sized toothbrush. In addition to this, 14.0% of girls and 10.0% of boys thought that their teeth were getting worse despite of daily brushing. However, only 15.3% of the girls and 14.3% of the boys had used a die to check their teeth. Less than half of the participants were told by their dentists that they brush their teeth very well. At the same time, it was found that 55.4% of the girls and 55.7% of the boys put off going to the dentist unless and until they have a toothache.

Table 4 depicts the percentage of “Agree” responses according to different professional years. A large number of students from II<sup>nd</sup> year (81.5%) noticed some white sticky deposits on their teeth. Similarly, maximum number of students of same year (92.6%) thought that they cannot help having false teeth when they would be old ( $p < 0.001$ ). Mostly, V<sup>th</sup> and II<sup>nd</sup> year students used to brush each of their teeth carefully. High number of clinical students had been thought professionally how to brush compared to preclinical students ( $p < 0.001$ ). Beside this, junior students responded more positively than seniors about cleaning the teeth well without using toothpaste ( $p < 0.05$ ). Significant numbers of students from all the years were worried about having bad breath ( $p < 0.05$ ).

Less awareness was seen among II<sup>nd</sup> year students (44.4%) regarding the knowledge to prevent gum disease with tooth brushing alone ( $p < 0.05$ ). Several students from all the years were against the usage of tooth brush which has hard bristles. Most of the interns have the misconception that they don't brush well unless and until they do strong strokes ( $p < 0.001$ ). Less than half of the study participants felt that they used to take too much time to brush their teeth.

### Discussion

Oral hygiene behavior and seeking oral health care depend on various factors. Patients comply better with oral health care regimens when provided with a better knowledge. A higher likelihood of seeking preventive dental care is found to be associated with dental health knowledge [2]. Increased knowledge of the oral self-care among the dental students through academic learning helps to motivate their patients for the primary prevention of oral diseases. The present study showed an overall mean of HU-DBI score as 14.04 among dental students. This mean HU-DBI score was higher than that of U.S and Japanese dental hygiene students [2,10]. Baseer, *et al.* Also showed an overall mean HU-DBI score of 7.31 among dental hygiene students which was less than that of present study [11].

On an average, 83.2% of dental students were worried about the color of their teeth whereas half of the participants were worried about the color of their gums. 65.7% thought that they couldn't help having false teeth when they will grow old and 90.3% of them checked their teeth in the mirror after brushing. Hence this proves a significant effect of esthetically and functionally fit dentition on the young minds.

At the same time, the lack of knowledge among the dental students can be gauged by the fact that less than 1/4<sup>th</sup> of the dental students have never been taught professionally how to brush their teeth and only 14.8% of them have used a dye to check for the plaque levels. 55.5% of the dental students put off going to the dentist until they have a toothache and 15.1% of dental students used toothbrushes with hard bristles. These findings were in contrast to the results of Singh et al study among dental professional and students [12].

In the present study, overall no significant differences between boys and girls were found in terms of oral health awareness and the findings were similar to Zakrzewska JM study [13]. However, many researchers have found that females engage in better oral hygiene behavior, possess a greater interest in oral health and perceive their own oral health to be better than do males [14,15].

Almost, same number of both girls and boys were worried about visiting the dentist and were also concerned about the color of their teeth. A significant difference between the genders was seen in oral health behavior as more number of girls (14.0%) believed that their teeth were getting worse despite the daily brushing. 93.6% girls check their teeth in the mirror after brushing as compared to 87.1% boys. It might be due to the fact that girls are more worried about their teeth appearance. Girls can also be assumed to be more concerned about tooth care as they used to brush each of their teeth carefully. However same number of boys and girls put off going to the dentist until they have a toothache. Almost negligible number of girl's students thought that they can clean their teeth without using the toothpaste.

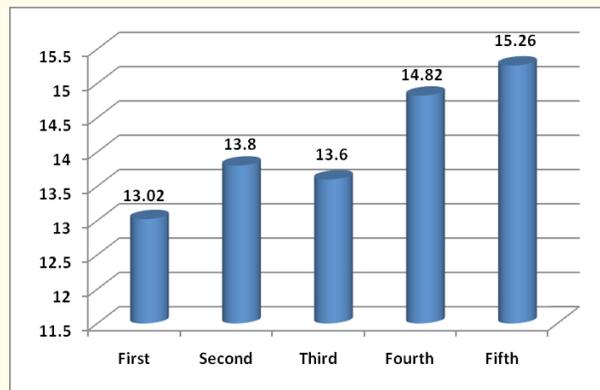
A variable positive attitude was observed among the dental students as they progressed from first year to interns. In fact, they showed a more positive dental health attitude and behavior in the last year of training. This positive attitude and behavior was reflected by their worrying about the color of teeth; worrying about brushing each teeth carefully and checking the teeth in mirror after brushing alone. This could be due to the increased knowledge and awareness of oral health care as they advanced through the curriculum and

similar results were found in Baseer et al study of female dental hygiene students and interns of Saudi Arabia [11]. However, Dogan B study showed no significant difference between semifinal and final years within dental students [16].

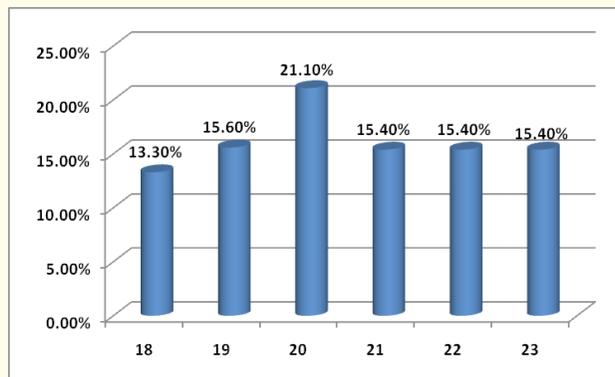
In all, the teeth brushing behavior was better in interns as compare to the first year students. Botheration of the color of the gums was found highest among the final year students i.e. 70.4% which portrays the effect of knowledge and attitude on the oral health behavior. More number of fourth year students and interns were taught professionally about the brushing technique as compared to the first year students.

**Conclusion**

The study showed significant level of awareness among the participants and also showed its positive relation to the advancing education. Oral health education of students adopted healthy behavior that would play a most important role in order to control oral disease. Still as we know that dental students have more prolonged and direct contact with patients during their clinical practice. So, there is more need to adopt preventive measures by them.



**Graph 1:** Showing frequency of distribution according to different professional years.



**Graph 2:** Showing frequency of distribution according to age in years.

SEX	No	Mean	Std. Deviation	p- value
Girls	314	14.09	2.160	0.374
Boys	70	13.83	2.485	

**Table 1:** Showing means scores of Agree responses.

Years	No	Mean	Std. Deviation	F	Sig.
I <sup>st</sup>	96	13.02	1.963	16.313	.000
II <sup>nd</sup>	54	13.80	2.227		
III <sup>rd</sup>	85	13.60	2.071		
IV <sup>th</sup>	71	14.82	2.079		
V <sup>th</sup>	78	15.26	2.041		
Total	384	14.04	2.222		

**Table 2:** Showing means scores of Agree responses.

S. No	Questions	Gender		p-value
		Girls	Boys	
1	I don't worry much about visiting dentist.	186(59.2%)	39(55.7%)	0.341
2	My gums tend to bleed when I brush my teeth.	29(9.2%)	7(10.0%)	0.495
3	I worry about the colour of my teeth.	267(85.0%)	57(81.4%)	0.279
4	I have noticed some white sticky deposits on my teeth.	225(71.7%)	56(80.0%)	0.099
5	I used a child-sized toothbrush.	21(6.7%)	4(5.7%)	0.508
6	I think that I cannot help having false teeth when i am old.	211(67.2%)	45(64.3%)	0.369
7	I am bothered by the colour of my gums.	186(59.2%)	40(57.1%)	0.424
8	I think my teeth are getting worse despite my daily brush.	44(14.0%)	7(10.0%)	0.247
9	I brush each of my teeth carefully.	264(84.1%)	55(78.6%)	0.174
10	I have never been taught professionally how to brush.	236(75.2%)	56(80.0%)	0.244
11	I think I can clean my teeth well without using tooth paste.	6(1.9%)	7(10.0%)	0.003
12	I often check my teeth in a mirror after brushing alone.	294(93.6%)	61(87.1%)	0.060
13	I worry about having bad breath.	236(75.2%)	55(78.6%)	0.332
14	It is impossible to prevent gum disease with tooth brushing alone.	185(58.9%)	39(55.7%)	0.359
15	I put off going to the dentist until I have a toothache.	174(55.4%)	39(55.7%)	0.536
16	I have used a dye to see how clean my teeth are.	48(15.3%)	10(14.3%)	0.500
17	I used a toothbrush which has a hard bristles.	41(13.1%)	12(17.1%)	0.236
18	I do not feel I've brushed well unless I brush strong strokes.	262(83.4%)	51(72.9%)	0.032
19	I feel I sometimes take too much time to brush my teeth.	122(39.0%)	26(37.1%)	0.443
20	I have had my dentist tell me that I brush very well.	134(42.7%)	34(48.6%)	0.221

**Table 3:** Percentage of "Agree" responses by Dental Students according to gender.

S. no	Questions	Years of Education					p-value
		I <sup>st</sup>	II <sup>nd</sup>	III <sup>rd</sup>	IV <sup>th</sup>	V <sup>th</sup>	
1	I don't worry much about visiting dentist.	52(54.2%)	39(72.2%)	41(48.2%)	53(74.6%)	40(51.3%)	0.001
2	My gums tend to bleed when I Brush my teeth.	12(12.5%)	5(9.3%)	6(7.1%)	2(2.8%)	11(14.1%)	0.121
3	I worry about the colour of my teeth.	81(84.4%)	40(74.1%)	71(83.5%)	66(93.0%)	66(84.6%)	0.079
4	I have noticed some white sticky deposits on my teeth.	75(78.1%)	44(81.5%)	58(68.2%)	50(70.4%)	54(69.2%)	0.283
5	I used a child-sized toothbrush.	4(4.2%)	4(7.4%)	3(3.5%)	8(11.3%)	6(7.7%)	0.288
6	I think that I cannot help having false teeth when I am old.	61(63.5%)	50(92.6%)	41(48.2%)	46(64.8%)	58(74.4%)	0.000
7	I am bothered by the color of my gums.	40(41.7%)	31(57.4%)	52(61.2%)	50(70.4%)	53(67.9%)	0.001
8	I think my teeth are getting worse despite my daily brush.	16(16.7%)	5(9.3%)	20(23.5%)	7(9.9%)	3(3.8%)	0.003
9	I brush each of my teeth carefully.	66(68.8%)	52(96.3%)	67(78.8%)	61(85.9%)	73(93.6%)	0.000
10	I have never been taught Professionally how to brush.	54(56.3%)	36(66.7%)	68(80.0%)	64(90.1%)	70(89.7%)	0.000
11	I think I can clean my teeth well Without using toothpaste.	3(3.1%)	6(11.1%)	1(1.2%)	0(0%)	3(3.8%)	0.008
12	I often check my teeth in a Mirror after brushing alone.	92(95.8%)	49(90.7%)	76(89.4%)	65(91.5%)	73(93.6%)	0.533
13	I worry about having bad Breath.	73(76.0%)	33(61.1%)	64(75.3%)	63(88.7%)	58(74.4%)	0.012
14	It is impossible to prevent gum Disease with tooth brushing alone.	51(53.1%)	24(44.4%)	60(70.6%)	46(64.8%)	43(55.1%)	0.016
15	I put off going to the dentist Until I have a toothache.	57(59.4%)	36(66.7%)	56(65.9%)	34(47.9%)	30(38.5%)	0.001
16	I have used a dye to see how Clean my teeth are.	2(2.1%)	5(9.3%)	7(8.2%)	13(18.3%)	31(39.7%)	0.000
17	I used a toothbrush which has a Hard bristles.	19(19.8%)	10(18.5%)	6(7.1%)	9(12.7%)	9(11.5%)	0.109
18	I do not feel I've brushed well Unless I brush strong strokes.	82(85.4%)	33(61.1%)	66(77.6%)	59(83.1%)	73(93.6%)	0.000
19	I feel I sometimes take too Much time to brush my teeth.	29(30.2%)	20(37.0%)	32(37.6%)	34(48.6%)	33(42.3%)	0.176
20	I have had my dentist tell me That I brush very well.	27(28.1%)	31(57.4%)	35(41.2%)	16(22.5%)	59 75.6%)	0.000

**Table 4:** Percentage of "Agree" responses by Dental Students according to different professional years.

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