

Assessment and Comparison of Oral Health Attitudes and Behavior Between Preclinical and Clinical Dental Students of Nepal Medical College Teaching Hospital.

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ABSTRACT

Health is a universal requirement for everybody. General health cannot be attained or maintained without oral health. The dental schools are places where individual responsibility for self oral care is developed among the dental students which directly have a positive effect on the oral health awareness of the community as a whole. With this in mind, we designed a study to assess and compare oral health attitude and behavior of undergraduate (preclinical and clinical) dental students in Nepal Medical College Teaching Hospital. A questionnaire based on English version of Hiroshima University Dental Behavior Inventory (HU-DBI) was emailed to 225 students. Data was analyzed using SPSS version 17.0. The association between oral health behavior with sex of student and level of study was tested with the help of Chi squared test and independent sample t-test. The level of significance was set at 5%. A total of 218 students emailed back making response rate of 96.8%. The mean values of oral health behavior estimate did not show significant difference among the students on the basis of sex. However, the mean values of the summary estimate among the clinical students was significantly ($p < 0.001$) higher compared to pre-clinical students. Clinical dental students had better oral health attitudes and behavior compared to preclinical dental students. In this study, the overall oral health attitude and behavior was good for dental students. There was no significant difference related to sex of the dental students. However, clinical year students had significantly better oral health attitudes and behavior compared to preclinical students.

Keywords: Attitude, Behavior, Oral Health, Students.

INTRODUCTION

Health is a universal requirement for everybody. General health cannot be attained or maintained without oral health. 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}

Dental schools are places where individual responsibility for self oral care is developed among the dental students which directly have a positive effect on the oral health awareness of the community as a whole. Oral health knowledge is considered to be an essential prerequisite for health-related behavior although only a weak association seems to exist between knowledge and behavior in cross-sectional studies by Ashley FP.³ Clinical training and course content influence the effect of the developing oral health behavior of dental students as their understanding of preventive dental procedures will improve their commitment toward enhancing the oral health of their patients. It is assumed that further dentist attitudes towards their oral and

dental health condition is the best means to reflect if students realize the significance of these factors for general health.⁴ Dental students are generally motivated to maintain good oral health and researchers have found that the oral health attitudes and behavior of dental students differed in preclinical and clinical years.^{5,6} Furthermore the oral health attitudes and behavior of dental students were found to vary between countries and culture.^{7,8} With this in mind, we decided to conduct a study to assess and compare oral health attitudes and behavior among pre-clinical and clinical dental students of a teaching hospital.

MATERIALS AND METHODS

The study was conducted in among the undergraduate dental students of Nepal Medical Collage and Teaching Hospital, Attarkhel, Jorpati, the time duration being 6 months (1st February to 30^h July). The students were divided into two categories: students in the preclinical years (first and second year) of study and students in clinical years (third, fourth and fifth year) of study. In the preclinical years of study, they don't treat patients

while they start diagnosing and treating patients under supervision in clinical years of study. Attitude and behavior of the undergraduate dental students was assessed through English version of Hiroshima University Dental Behavior Inventory (HU-DBI) (table.1) which was developed by Kawamura and has been useful for assessing patient's (patient or student's) perception and oral health behavior.⁷ It retains psychometric properties after translation into English. Therefore, HU-DBI is capable of measuring attitudes and behavioral aspects of dental students and may serve as a useful standard for cross cultural comparisons of dental students in other populations has been used in many countries to assess the attitude of oral health. It has given good test results. The questionnaire consists of twenty dichotomous (close-ended) responses i.e. either agree or disagree regarding oral health-related behavior.

The English version of questionnaire of the HU-DBI was e-mailed to 100 preclinical and 125 clinical undergraduate students. Unfilled or partially filled questionnaires were not considered. The data was entered, edited and coded in Microsoft Excel version 7.0. The data was exported and analyzed with the help of Statistical Package for Social Sciences (SPSS) version 20.0. The descriptive statistics like mean, median, STD deviation and inter-quartile range was calculated. Association of categories of non-clinical and clinical students and gender with oral health attitude and behavior was done with the help of chi-square tests and Fisher's exact test wherever applicable for dichotomous responses. HU-DBI scores was calculated by giving single point to every agree response to the items 4, 9, 11, 12, 16, 19 and disagree response to the items 2, 6, 8, 10, 14, 15. Thus, adding the points of these 12 items gave us the summary estimate of oral health behavior. Independent sample t-test was used to find association of gender and level of study with oral health attitude and behavior scores. The level of significance was set at 5%.

The comparative study was conducted after obtaining permission from NMC – RESC (Research and Ethical Sub-Committee-reference no 46-072/073) . Informed consent was taken from all students to be a part of the study. Confidentiality and anonymity of the study respondents was assured and maintained.

RESULTS

There are a total of 225 students in B.D.S course in which 218 students (98 preclinical and 120 clinical) responded leading to response rate of 96.8%. Distribution of study participants based on the years of study is given in Figure 1.

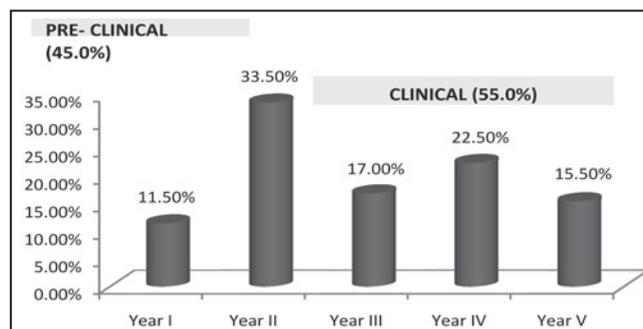


Figure 1: Percentage distribution of the students in various years of their study.

Majority of students were from second year of study. The proportion of pre-clinical students was 45% while 55% of students belonged to clinical years of study. According to sex distribution, majority (76.0%) of the student were females (Figure 2).

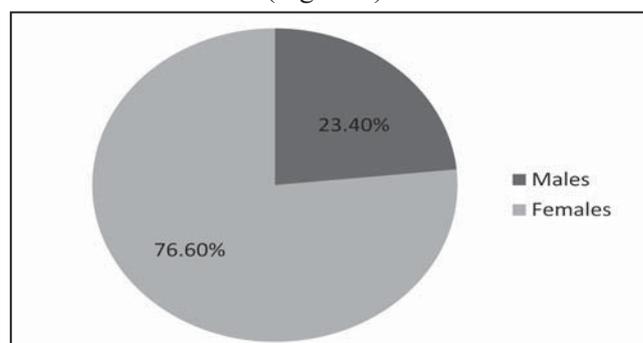


Figure 2: Sex distribution of the BDS students of a teaching hospital

Table 1. shows the distribution of agree responses to the 20 items of the questionnaire. The maximum (37.6%) agree response to the item 1 i.e. didn't worry much about visiting the dentist was among the second year students. Similarly, majority (41.7%) of the second year students agreed that their gums tend to bleed while brushing (item2). About half of the first and second year students were worried about the color of teeth (items3) and similar proportions of students had noticed some white sticky deposits on teeth (item4) and worry about having bad breath (item13). More than one fourths (29.8%) of the students think that they can't help having false teeth when they are old (item6) and similar proportion (27.6%) agreed that were bothered by the color of their gums (item7). More than one thirds (37.5%) think their teeth are getting worse despite their daily brushing (item8) and more than half of the students (51.6%) have never been taught professionally how to brush (item10).

A large proportion (35.2%) agreed that it is impossible to prevent gum disease with toothbrush alone (item14) and one thirds (33.9%) of students often check their teeth in a mirror after brushing (item12). More than one thirds (34.6%) used brush with strong strokes (item 18) and 33.9% put off going to the dentist until they

Table 1: Percentage distribution of the questionnaire by agree responses among the students.

Items	Items of HU-DBI	Year I	Year II	Year III	Year IV	Year V
	I don't worry much about visiting the dentist.	12.8%	37.6%	16.8%	21.6%	11.2%
	My gums tend to bleed when I brush my teeth	11.1%	41.7%	08.3%	27.8%	11.1%
	I worry about the color of my teeth.	14.7%	35.3%	15.4%	21.2%	13.5%
	I have noticed some white sticky deposits on my teeth	10.4%	36.5%	25.0%	20.8%	07.3%
	I use a child sized toothbrush	0%	40.0%	40.0%	0%	20.0%
	I think that I can't help having false teeth when I am old	17.0%	29.8%	13.8%	25.5%	13.8%
	I am bothered by the color of my gums	12.6%	27.6%	16.1%	20.7%	23.0%
	I think my teeth are getting worse despite my daily brushing.	19.4%	37.5%	19.4%	13.9%	09.7%
	I brush each of my teeth carefully.	11.9%	28.6%	19.0%	28.6%	11.9%
	I have never been taught professionally how to brush	25.0%	51.6%	09.4%	09.4%	4.7%
	I think I can clean my teeth without using toothpaste	14.8%	29.6%	11.1%	29.6%	14.8%
	I often check my teeth in a mirror after brushing	10.9%	35.2%	14.5%	22.3%	17.1%
	I worry about having bad breath.	12.2%	36.5%	16.9%	23.0%	11.5%
	It is impossible to prevent gum disease with toothbrush alone.	10.4%	35.6%	17.8%	19.0%	17.2%
	I put off going to the dentist until I have a toothache	13.2%	33.9%	19.0%	22.35	11.6%
	I have used a dye to see how clean my teeth are	17.8%	08.9%	15.6%	33.3%	24.4%
	I use a toothbrush which has hard bristles.	34.6%	11.5%	11.5%	23.1%	19.2%
	I don't feel I've brushed well unless I brush with strong strokes.	17.3%	34.6%	19.2%	19.2%	09.6%
	I feel I sometimes take too much time to brush my teeth	12.0%	26.1%	14.1%	30.4%	17.4%
	I have had my dentist tell me that I brush very well	18.3%	29.6%	16.9%	21.1%	14.1%

Table 2: Questionnaire items of the HU-DBI and percentage of agree responses by sex.

HU-DBI Items	Sex of the students		Chi-square value	P value
	Male	Female		
Item 1	27 (21.6%)	98 (78.4%)	0.526	0.519
Item 2	10 (27.8%)	26 (72.2%)	0.497	0.521
Item 3	36 (23.1%)	120 (76.9%)	0.031	0.861
Item 4	20 (20.8%)	76 (79.2%)	0.628	0.520
Item 5	0 (0%)	5 (100%)	1.563	0.593
Item 6	19 (20.2%)	75 (79.8%)	0.934	0.420
Item 7	18 (20.7%)	69 (79.3%)	0.591	0.515
Item 8	16 (22.2%)	56 (77.8%)	0.082	0.866
Item 9	31 (24.6%)	95 (75.4%)	0.243	0.746
Item 10	05 (07.8%)	59 (92.2%)	12.274	*<0.001
Item 11	06 (22.2%)	21 (77.8%)	0.024	1.000
Item 12	48 (24.9%)	145 (75.1%)	2.046	0.210
Item 13	38 (25.7%)	110 (74.3%)	1.338	0.305
Item 14	40 (24.5%)	123 (75.5%)	0.473	0.582
Item 15	26 (21.5%)	95 (78.5%)	0.552	0.521
Item 16	05 (11.1%)	40 (88.9%)	4.774	*0.03
Item 17	03 (11.5%)	23 (88.5%)	2.315	0.147
Item 18	09 (17.3%)	43 (82.7%)	1.412	0.265
Item 19	26 (28.3%)	66 (71.7%)	2.103	0.147
Item 20	17 (23.9%)	54 (76.1%)	0.018	1.000

* statistically significant.

have a toothache (item15). Dentist told more than a quarter of second year students (29.6%) that they brush very well. Majority of the students of clinical years has used a dye to check how clean their teeth are (item16) and 30.4% of them feel that they sometimes take too much time to brush their teeth (item19). A large majority (34.6%) of first year students used a toothbrush which has hard bristles(item17) ,while highest majority (28.6% and 29.6%) of students who brush each tooth carefully (item 9) belonged to second and fourth year. Interestingly, 29.6% of students of second and fourth year thought they can clean teeth without using toothpaste (item11) while 40% of second and third year students used a child sized toothbrush (item5).

Table 2 shows that item 10 and 16 of HU-DBI questionnaire revealed significant results with respect to sex of the BDS students. Higher proportion of female students (92.2%) agreed that they have never been

taught to brush professionally (item 10) compared to male students (07.8%) and this result reached statistical significance (p<0.001). A significantly larger percentage (88.9%) of female students had used a dye to check cleanliness of their teeth (item 16) compared to male students (11.1%).

Table 3 showed that Item 3, 8, 10 and 16 of HU-DBI questionnaire is associated of with level of education i.e. whether they are clinical students of year III, IV and V or whether they are pre-clinical students of Year I and II. A higher proportion of pre-clinical students (56.9%) think that their teeth are getting worse despite daily brushing compared to clinical students (43.1%). Similarly, larger proportion (76.6%) of pre-clinical students stated that they have never been taught professionally how to brush. However, a larger proportion (73.3%) of clinical students used a dye to see how clean their teeth were (item 16).

Table 3: Questionnaire items of the HU-DBI and percentage of agree responses by level of education.

HU-DBI Items	Level of education		Chi-square value	P value
	Clinical	Pre-clinical		
Item 1	62 (49.6%)	63 (50.4%)	3.512	0.07
Item 2	17 (47.2%)	19 (52.8%)	1.067	0.36
Item 3	78 (50.0%)	78 (50.0%)	5.644	*0.023
Item 4	51(53.1%)	45 (46.9%)	0.256	0.681
Item 5	03 (60.0%)	02 (40.0%)	0.051	1.000
Item 6	50 (53.2%)	44 (46.8%)	0.230	0.681
Item 7	52(59.8%)	35(40.2%)	1.306	0.269
Item 8	31 (43.1%)	41 (56.9%)	6.246	*0.014
Item 9	75 (59.5%)	51 (40.5%)	2.419	0.131
Item 10	15 (23.4%)	49(76.6%)	36.578	*<0.001
Item 11	15 (55.6%)	12 (44.4%)	0.003	1.000
Item 12	104 (53.9%)	89 (46.1%)	0.915	0.397
Item 13	76 (51.4%)	72 (48.6%)	2.542	0.145
Item 14	88 (54.0%)	75 (46.0%)	0.292	0.640
Item 15	64 (52.9%)	57 (47.1%)	0.510	0.496
Item 16	33(73.3%)	12 (26.7%)	7.664	*0.007
Item 17	14 (53.8%)	12 (46.2%)	0.017	1.000
Item 18	25 (48.1%)	27 (51.9%)	1.340	0.267
Item 19	57 (62.0%)	35 (38.0%)	3.072	0.098
Item 20	37 (52.1%)	34 (47.9%)	0.366	0.564

* statistically significant.

Table 4: Comparison of summary estimates for oral health behavior by sex and level of study.

Parameters	Categories	N	Item (mean ± sd)	Mean Difference	95% Confidence Interval		p value
					Lower	Upper	
Sex	Male	51	7.00±1.57	0.395	-0.118	0.908	0.130
	Female	167	6.60 ± 1.64				
Level of study	Clinical	120	7.16 ±1.53	1.026	0.609	1.443	*<0.001
	Pre-clinical	98	6.13± 1.57				

* statistically significant.

Summary estimate of HU-DBI questionnaire was calculated using responses to Item 2, 4, 6, 8, 9, 10, 11, 12, 14, 15, 16, and 19. The mean values of oral health behavior estimate did not show significant difference among the students on the basis of sex. However, the mean values of the summary estimate among the clinical students was significantly ($p < 0.001$) higher compared to pre-clinical students (Table 4).

DISCUSSION

Oral health professionals should raise awareness of oral disease to their patients. Correct oral health methods should be followed by patients to prevent oral diseases. Dental students should have a positive attitude towards oral health because they can play an important role in oral health education and promotion of individual and community. This is the first formal study which has been conducted in Nepal at Nepal Medical College Teaching Hospital, Attarkhel, Jorpati to assess and compare the oral health attitudes and behavior of undergraduate dental students. The students who participated in this study learn preventive dentistry in the third year. Summary estimate of HU-DBI questionnaire was calculated using responses to Item 2, 4, 6, 8, 9, 10, 11, 12, 14, 15, 16, and 19 which agrees with the results of some previous studies.⁹⁻¹¹

The results of the present study indicated that the mean values of the summary estimate among the clinical students were significantly higher compared to pre-clinical students. The difference appears to reflect the variation in the student's educational level. The findings were consistent with a study while contrary to a finding reported by Swati Vengupyrum who found that the overall oral attitudes and behavior was significantly higher in preclinical dental students.¹²⁻¹³

In this study, 73.3% of clinical students used a dye to see how clean their teeth were. This might be due to the fact that students take the Periodontics lecture relating to the use of disclosing solution in the third year of study. Similar result was seen in a study done by Swati *et al.*¹³ In the current study, more than two thirds (76.6%) of pre-clinical students stated that they have never been taught professionally how to brush. Similar were the findings from a study done by Rushab *et al* in which 48.1% of first year and 52.4% of second year students have not been taught to brush professionally.¹² This might be because preventive dentistry classes are taught in third year of dental education. Higher proportion of pre-clinical students (56.9%) think that their teeth are getting worse despite their daily brushing compared to clinical students (43.1%). This may be because most of them said that they haven't been taught professionally how to brush. In this study 52.8% of preclinical students

had bleeding which was higher in proportion than found among Australian dental students (6%), Finnish (45%) and Japanese (25%) dental students.¹⁴ More than half (59.5%) of clinical and 40.5% of preclinical students brushed each of their teeth carefully which was less compared to Finnish (78%) and higher than Japanese (55%) dental students.¹⁴ This suggests that the level of student's self-care may have been influenced by their course contents. The general Israeli population had higher scores of 72.4% and 88.6% for "my gums tend to bleed when I brush" and "I have noticed white deposits on my teeth".¹⁵ In the current study, 52.8% for preclinical students and 47.2% for clinical students, 51.3% for clinical and 46.9% for preclinical Nepali dental students. This indicates that dental students have better oral health hygiene hence, better oral health attitudes. Majority (92.2%) of female students agreed that they had not been taught professionally to brush compared to 7.8% of male students and a very large proportion (88.9%) of female students used a dye to check cleanliness of their teeth compared to 11.1% of male students. These findings show that female dental students are more concerned about aesthetics compared to males however, there was no statistical significance. The findings were consistent with a study done on Mongolian dental students while different from the findings of other study where women reported significantly higher frequencies of tooth brushing compared with men.¹⁶⁻¹⁹

The study has certain limitations. Firstly, the findings of the study cannot be generalized and thus, limited to dental students of Nepal Medical College Teaching Hospital. Such type of study should be conducted in other dental colleges of Nepal with representative sample of male and female students from various level of dental education for comparison with each other. In this study, the overall oral health attitude and behavior was good for dental students. There was no significant difference related to sex of the dental students. The attitude of students towards oral health increased with the level of education. Clinical students had significantly better oral health attitudes and behavior compared to preclinical students.

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