



Evaluation and Comparison of Oral Health Concern in Rayat Bahra University, using Hiroshima University Dental Behavioural Inventory (Hu-Dbi)

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Abstract: *Oral Health status plays an integral role for both the individual and the community they live in. An oral health survey was pursued in a defined population of Dental students and, was then differentiated from the Nursing and Pharmacology students.*

Keywords: Oral Health status; Hiroshima University Dental Behavioural Inventory; Dental students; Nursing and Pharmacology Students; Cross-sectional study; Chi-square.

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1. Introduction

Dental students have the key responsibility of maintaining their oral hygiene to promote their patients to do the same [1]. It is important to understand that overall health can only be attained by having a healthy oral cavity. Therefore, oral health status is a reflector of the potential risk factors and risk indicators. Assessing the oral status is comprehensive due to unawareness, economic and technological barriers. Enhancement of oral hygiene depends on certain other factors like socio-economic status of an individual, literacy level, and situation of the family [2].

As future dentists, dental students possess a social and professional responsibility to serve to the community as well in particular towards the patients they treat [3]. For this reason, they should be continuously motivated to improve their oral hygiene along with enhancement of their knowledge related to importance of oral health [4].

This research aimed to assess and contrast the oral health awareness [14] and management among the dental students and those studying nursing and pharmacy and also observe any differences in oral status between the genders.

2. Materials And Method Used

In the given study, 214 dental students and 218 students from nursing and pharmacology in Rayat Bahra University, Mohali, Punjab, India were given a sheet comprising 23 questions. The data thus collected from 214 dental students and 218 nursing

and pharmacology students were compared using the English version of HU-DBI which includes an inventory of 20 questions and 3 questions were added to this set. The English version has also shown good test-retest reliability and translation validity [5].

After accessing permissions from the concerned departments, the students were requested to assemble after their lectures and were explained the purpose of the survey being conducted and how to respond to the test items. The investigators were present amongst the students throughout the survey for answering any doubts regarding the questionnaires.

The volunteers were explained to filling the space in the given sheet with two responses only, YES and NO, the volunteers were asked to write their gender on the sheets provided. After the collection of the forms, they were sorted based on gender.

3. Data Analysis

The data was collected by statistical program for social sciences (SPSS) for Windows version 16.0 and statistical analysis was made based on response to each question. The comparison in responses was made using chi-square. The significance level was set at $p < 0.05$.

4. Results

A total of 432 students participated in this survey, consisting of 214 (49.53%) dental students of which 177 (82.7%) were females and 37 (17.3%) were males and 218 (50.46%) nursing and

pharmacology students of which 160 (73.4%) were females and 58 (26.6%) were males. A 100% response rate was achieved in this survey.

The given table 1 demonstrated the “YES” response from the dental department and nursing & pharmacology department.

Table 1: Percentage of “YES” response from Dental students and nursing & pharmacology students

S. No.	Questions	Dental Students n (%)	Nursing & Pharmacology students n (%)	Total n (%)	P value
1	Visit to dentist does not concern me.	108(51.7)	130(59.9)	238(55.9)	0.087
2	I have observed bleeding gums while brushing my teeth.	13(6.1)	23(10.6)	36(8.3)	0.092
3	The color of my teeth concerns me a lot.	169(79.3)	136(63.0)	305(71.1)	<0.001*
4	I frequently observe some white sticky deposits on the surface of my teeth.	59(28.1)	54(24.8)	113(26.4)	0.435
5	The size of my toothbrush is small.	1(0.5)	15(6.9)	16(3.7)	0.000
6	I believe that I will definitely get false teeth when I age.	65(32.0)	73(34.3)	138(33.2)	0.626
7	The color of my gums is matter of concern for me.	102(47.9)	104(47.7)	206(47.8)	0.970
8	Regular brushing is not helping my teeth to get better.	38(17.8)	43(20.4)	81(19.7)	0.506
9	I carefully brush every tooth.	163(76.2)	196(90.3)	359(83.3)	<0.001*
10	Toothbrushing technique by a professional has never been taught to me.	80(37.6)	79(36.7)	159(37.1)	0.862
11	I believe that toothpaste is not required to clean my teeth.	8(3.8)	30(13.8)	38(8.8)	<0.001*
12	I regularly check the mirror after brushing my teeth.	193(90.6)	190(87.6)	383(89.1)	0.310
13	I am concerned about the bad breath or halitosis.	165(77.5)	129(59.7)	294(68.5)	<0.001*
14	I believe that toothbrush is insufficient is preventing gum disease.	135(63.1)	105(48.2)	240(55.6)	0.002*
15	I often avoid dentist appointment until I have a toothache.	140(67.0)	151(69.9)	291(68.5)	0.517

*significant value

Approximately 60% of the nursing and pharmacology students did not worry much about visiting the dentist. Only 10.6% of the nursing & pharmacology students reported having bleeding from gums while brushing and 79.3% of the dental students had noticed white sticky deposits [13] on their teeth. A child-sized toothbrush [13] was used by 28.1% of dental students. Among all the students, 47.9% of the dental students were worried about their tooth color and 90.3% of the nursing& pharmacology students brushed each tooth carefully. Almost 38% of the dental students were taught professionally to brush their teeth and a difference of 10% was observed in the students who thought that they could brush their teeth without toothpaste. As many as 77.5% of the dental

students were worried about their bad breath and 13.4% nursing& pharmacology students put off dental appointments until toothache begins. Nearly 16% of nursing& pharmacology students used a toothbrush with hard bristles and 30.2% used strong strokes while brushing. Out of all the dental students, 76% of them suffered from tooth sensitivity whereas 69.6% of nursing& pharmacology students were affected by the same. More than 50% of nursing& pharmacology students were observed to brush twice daily as compared to 48.6% of the dental students. The use of mouthwash was higher in nursing & pharmacology students that are 37.3% whereas 19% of the dental students used mouthwash daily.

Table 1: Cont...

S. No.	Questions	Dental Students n (%)	Nursing & Pharmacology students n (%)	Total n (%)	P value
16	To check the cleanliness of my teeth, I have used a dye.	2(0.9)	29(13.4)	31(7.2)	0.000
17	The toothbrush that I am currently using has hard bristles.	26(12.1)	35(16.1)	61(14.2)	0.236
18	I believe that using strong strokes help to clean teeth better.	59(27.8)	65(30.2)	124(29.0)	0.585
19	The amount of time I devote to brushing my teeth is more than necessary.	92(43.0)	134(61.8)	226(52.4)	<0.001*
20	My dentist has mentioned that I brush my teeth properly.	81(38.9)	117(53.7)	198(46.5)	0.002*
21	Sensitivity, that is, feeling of hot and cold foodstuff bothers me a lot.	158(76.0)	151(69.6)	309(72.7)	0.140
22	I brush my teeth twice daily.	102(48.6)	115(53.0)	217(50.8)	0.361
23	I tend to use mouthwash on regular basis.	40(19.0)	81(37.3)	121(28.3)	<0.001*

Table 2 depicts the comparison of oral health status between males of females of all the departments that is Dental, Nursing, and Pharmacology. It is observed that 57.8% of the females were not worried much about visiting the dentist and 8.6% of the females encountered bleeding of the gums while brushing their teeth. The percentage of females who worried about their tooth color was 2.5% higher than males. Nearly 33% of the males noticed white sticky deposits on their teeth while 3.6% of the females used child-sized toothbrushes. A nearly equal percentage of males and females bothered about the color of the gums. Out of all the females, 21.5% of them felt that despite regular brushing their teeth were getting worse. Approximately 92% of the males reported to brush each tooth carefully and 36.2% of the males had been professionally trained to brush their teeth. Almost 7% of females believed that they could brush

5. Discussion

The objective of this given study was to assess and compare the oral health [14] knowledge, status, and attitude in the dental, nursing, and pharmacology students at Rayat Bahra University, Mohali, Punjab. The results of the study have shown that oral status and awareness are similar in dental, nursing, and pharmacology students but the females are slightly more aware of their oral status than males. This has a resemblance to a study performed by Vangipuram et al. [6] in India, in which they had seen better behavior and knowledge among females toward their oral health. This study contrasted from a

their teeth without toothpaste and 66.4% of the females had a concern about bad breath. Among all the students, 50.5% of the males thought that it was impossible to prevent gum disorders through toothbrushing alone. The males put off going to the dentist until they suffer from toothache were 67% whereas 68.9% of the females did the same. Nearly 7% of the females had used dyes to see the cleanliness of their teeth. Toothbrush with hard bristles were used by 38.9% of the males and 32.3% of them used strong strokes while brushing. Nearly 52% of the females believed that they took too long to brush their teeth whereas 45.3% of the males had been told by their dentist that they brush very well. Among all the students, 72.5% of the females and 73.3% of the males had tooth sensitivity. Females took a lead by 10% in brushing their teeth at night whereas those who used mouthwash regularly were 5.1% higher than females. study by Kumar et al. [7] where they reported a remarkable difference between oral health behavior and attitude of dental and pharmacy students in Saudi Arabia.

The assessment of the attitude of the students towards oral healthcare was made in this study. Among all the students, 51.7% of the dental students and 59.9% of the nursing and pharmacology students did not worry much about visiting a dentist. Bleeding gums while brushing was reported by 6.1% of the dental and 10.6% of the nursing and pharmacology students, therefore the chances of gingivitis were reduced on a large scale.

Table 2: Gender-based percentage of YES responses among Dental, Nursing and Pharmacology students

S. No.	Questions	Male N (%)	Female N (%)	Total N (%)	P value
1	Visit to dentist does not concern me.	46(48.9)	192(57.8)	238(55.9)	0.125
2	I have observed bleeding gums while brushing my teeth.	7(7.4)	29(8.6)	36(8.3)	0.700
4	I frequently observe some white sticky deposits on the surface of my teeth.	31(32.6)	82(24.6)	113(26.4)	0.118
5	The size of my toothbrush is small.	4(4.3)	12(3.6)	16(3.7)	0.757
6	I believe that I will definitely get false teeth when I age.	28(31.5)	110(33.6)	138(33.2)	0.699
7	The color of my gums is matter of concern for me.	46(48.4)	160(47.6)	206(47.8)	0.890
8	Regular brushing is not helping my teeth to get better.	10(10.6)	71(21.5)	81(19.1)	0.018*
9	I carefully brush every tooth.	87(91.6)	272(81.0)	359(83.3)	0.014*
10	Toothbrushing technique by a professional has never been taught to me.	34(36.2)	125(37.4)	159(37.1)	0.824
11	I believe that toothpaste is not required to clean my teeth.	13(13.7)	25(7.4)	38(8.8)	0.058
12	I regularly check the mirror after brushing my teeth.	83(88.3)	300(89.3)	383(89.1)	0.786
13	I am concerned about the bad breath or halitosis.	71(76.3)	223(66.4)	294(68.5)	0.067
14	I believe that toothbrush is insufficient is preventing gum disease.	48(50.5)	192(57.0)	240(55.6)	0.264
15	I often avoid dentist appointment until I have a toothache.	61(67.0)	230(68.9)	291(68.5)	0.739
16	To check the cleanliness of my teeth, I have used a dye.	8(8.4)	23(6.9)	31(7.2)	0.605
17	The toothbrush that I am currently using has hard bristles.	13(13.8)	48(14.2)	61(14.2)	0.919
18	I believe that using strong strokes help to clean teeth better.	30(32.3)	94(28.1)	124(29.0)	0.440

*significant value

Table 2: Cont...

S. No.	Questions	Male N (%)	Female N (%)	Total N (%)	P value
19	The amount of time I devote to brushing my teeth is more than necessary.	52(54.7)	174(51.8)	226(52.4)	0.611
20	My dentist has mentioned that I brush my teeth properly.	43(45.3)	155(46.8)	198(46.5)	0.788
21	Sensitivity, that is, feeling of hot and cold foodstuff bothers me a lot.	66(73.3)	243(72.5)	309(72.7)	0.880
22	I brush my teeth twice daily.	40(43.0)	177(53.0)	217(50.8)	0.089
23	I tend to use mouthwash on regular basis.	30(32.3)	91(27.2)	121(28.3)	0.334

**significant value*

Nearly 63% of the dental and 48.2% of nursing and pharmacology students believed that it was impossible to prevent gum disease with a toothbrush alone. On the other hand, 48.6% and 19% of the dental students brushed their teeth at night and used mouthwash daily respectively. Furthermore, 3.8% of the dental and 13.8% of the nursing and pharmacology students thought that toothpaste is not required for brushing their teeth and 77.5% of the dental and 59.7% of the nursing and pharmacology students were concerned about halitosis.

The impact of dental aesthetics on the self-consciousness of the students has been investigated in this study. On an average, 91.8% examined their teeth in the mirror after brushing, 71.15% of the students were conscious about the color of their teeth, 47.8% were bothered by the color of their gums, 33.15% thought that they will get false teeth when they get old and 26.45% noticed white deposits on their teeth. Thus, this

indicates that aesthetics plays a significant impact on young students. The results were similar to the study conducted by Singh et al in Punjab [8].

The assessment of knowledge of the dental students and others was also conducted by this survey. In addition, 37% of the dental students were never taught professional tooth brushing, 12.1% of them were using a toothbrush with hard bristle, 27.8% of them were using strong strokes while brushing whereas 30.2% of the nursing and pharmacology students did the same. This is contrary to the study by Rong et al. (2005) in which they found a considerably greater number of medical students (35.7%) used hard bristles than dental students (2%) (9). Merely 0.9% of these students used a dye to see their tooth cleanliness. Among the dental students, 67% of them put off dental appointments until they had a toothache. Moreover, 76% of the dental and 69.6% of nursing and pharmacology students were bothered about sensitivity.

It has been observed by the researchers that females are more aware of their oral status than males [10]. In this study, males and females were nearly equal in terms of oral status, knowledge, and concern about how did their teeth look that is dental aesthetics. This is contrary to a study conducted among Japanese employees, where dental health knowledge, behavior, and attitude was much higher in females [11].

Females were slightly more concerned about their dental aesthetics than males. Nearly 72% of the females worried about their teeth color, and the males and females who looked at their teeth in the mirror after brushing were nearly 89%. Males who brushed each tooth carefully were 10.6% higher than females.

There was a comparison between the genders in terms of dental behavior. Females who thought that their regular brushing is not preventing teeth from getting worse were approximately 10% higher than males. Among all the males, 76.3% of them worried about halitosis whereas 66.4% of the females had the same concern. The percentage of females who brushed their teeth at night were 10% ahead of the males. Therefore, the behavior, attitude, awareness did not show a

remarkable gender difference. This is similar to the study conducted by Tseveenjav et al. where no differences were found between male and female Mongolian dental students [12].

6. Conclusion

The given study is the first formal assessment and comparison of the student attitude, behavior and knowledge regarding their oral health in dental students compared to the nursing and pharmacology students in Rayat Bahra University, Punjab, India. The knowledge and concern among the dental, nursing and pharmacology students did not have any significant difference. Nevertheless, the students begin learning preventive dentistry from the third year of their program, hence, further studies and researches regarding this aspect can help us improve the current trend of dental health awareness of students in this field.

Acknowledgement

The authors acknowledge the co-operation of the concerned authorities, faculty, undergraduate students of Rayat Bahra University, Mohali, Punjab, India.

References

- [1] E. B. Gallagher, P. M. Moody, Dentists and the oral health behavior of patients: A sociological perspective, *J Behav Med.*, **4(3)**, pp.283-95.
- [2] R. Freeman, (1999). The determinants of dental health attitudes and behaviours. *Br Dent J*, **187**, pp.15-18.
- [3] T. Komabayashi, M. Kawamura, K. J. Kim, F. A. Wright, D. Declerck, M. Docarmo, D. Hu, E. Honkala, G. Lévy, M. Kalwitzki, A.

- Polychronopoulou, Yip K. Hak-Kong, I. Eli, M. Kinirons, S. Petti, P. Srisilapanan, S. Y. L. Kwan, L. S. Centore, (2006), The hierarchical cluster analysis of oral health attitudes and behaviour using the Hiroshima University-ental Behavioural Inventory (HU-DBI) among final year dental students in 17 countries, *Int. Dent. J.* **56**, pp.310-316.
- [4] F. J. Cortes, C. Nevot, J. M. Roman, E. Cuenca, (2002), The evolution of dental health in dental students at the University of Barcelona, *J Dent Educ.*, **66**, pp.1203-1208.
- [5] M. Kawamura, et al., (1992), Dental behavioral science part IX: bilinguals' 10, responses to the dental behavioral inventory (HU-DBI), *J. Hiroshima University Dental Society*, **22**, pp.198-204.
- [6] S. Vangipuram, R. Rekha, G. Radha, S. K. Pallavi, (2015), Assessment of oral health attitudes and behaviour among undergraduate dental students using Hiroshima University Dental Behavioral Inventory HU-DBI, *J Indian Assoc Public Health Dent.*, **13(1)**, pp.52-57.
- [7] S. Kumar Tadakamadla, D. Kriplani, V. Shah, J. Tadakamadla, H. Tibdewal, P. Duraiswamy, S. Kulkarni, (2010), Oral health attitudes and behaviour as predisposing factor for dental caries experience among health professional and other professional college students of India, *Oral Health Prev. Dent.*, **8(2)**, pp.195-202.
- [8] S. Satpreet, G. Neha, K. Manavjot, (2013), An assessment and comparison of oral health status among dental students and dental professionals of a teaching institute in Punjab, India using the Hiroshima University- Dental Behavioral Inventory (HU- DBI), pp.5-7.
- [9] W. S. Rong, W. J. Wang, H. K. Yip, (2006), Attitudes of dental and medical students in their first and final years of undergraduate study to oral health behaviour, *Eur. J. Dent. Educ.*, **10(3)**, pp.178-184.
- [10] J. M. Al-Ansari, S. Honkala, (2007), Gender differences in oral health knowledge and behavior of the health science college students in Kuwait, *J. Allied Health*, **36(1)**, pp.41-46.
- [11] M. Kawamura, Y. Iwamoto, (1999), Present state of dental health knowledge, attitudes/behavior and perceived oral health of Japanese employees, *Int. Dent. J.*, **49(3)**, pp.173-181.
- [12] J. M. Zakrzewska, (1996), Women as dental patients: Are there any gender differences?, *Int. Dent. J.* **46**, pp.548-557.
- [13] Komabayashi, Takashi, Makoto Kawamura, Kang-Ju Kim, Fredrick A. C. Wright, Dominique Declerck, Maria do Carmo Matias Freire Goiãs, De-Yu Hu, Eino Honkala, Gérard Lévy, Manhas.
- [14] Kalwitzki, Argy Polychronopoulou, Kevin HakKong Yip, Ilana Eli, Martin J Kinirons,

Stefano Petti, Patcharawan Srisilapanan, Stella Y. L. Kwan, and Linda S. Centore. "The hierarchical cluster analysis of oral health attitudes and behaviour using the Hiroshima University - Dental Behavioural Inventory (HU-DBI) among final year dental students in 17 countries", International Dental Journal, 2006.

[15] Dogan, Basak. "Differences in oral health behavior and attitudes between dental and nursing students", Journal of Marmara University Institute of Health Sciences, 2013.

[16] Sinem Yildiz, Basak Dogan. "Self-Reported Dental Health Attitudes and Behaviour of Dental 4 1% 5 1% 6 1% 7 1% Students in Turkey", European Journal of Dentistry, 2019.

Appendix I: Hiroshima University-Dental Behavioral Inventory (HU-DBI) [13]

S. No.	Item Description
1.	I don't worry much about visiting the dentist
2.	My gums tend to bleed when I brush my teeth.
3.	I worry about the color of my teeth.
4.	I have noticed some white sticky deposits on my teeth.
5.	I use a child sized toothbrush.
6.	I think I cannot help having false teeth when I am old.
7.	I am bothered by the color of my gums.
8.	I think my teeth are getting worse despite my daily brushing.
9.	I brush each of my teeth carefully.
10.	I have never been taught professionally how to brush.
11.	I think I can clean my teeth well without using toothpaste.
12.	I often check my teeth in a mirror after brushing.
13.	I worry about having bad breath.
14.	It is impossible to prevent gum disease with toothbrushing alone.
15.	I put off going to the dentist until I have a toothache.
16.	I have used a dye to see how clean my teeth are
17.	I use a toothbrush which has hard bristles.
18.	don't feel I've brushed well unless I brush with strong strokes.
19.	I feel I sometimes take too much time to brush my teeth.
20.	I have had my dentist tell me that I brush very well.