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Oral health attitudes and behaviors of the dental students in a state university in İstanbul

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ABSTRACT

Aims: Dental students have a critical role in educating their patients and relatives regarding oral health. The aim of the present study is to evaluate the changes in attitude and behavior of dental students' during their education from preclinical to clinical classes using the Hiroshima University Dental Behavioral Inventory (HU-DBI).

Methods: The Turkish translation of HU-DBI was distributed to the 537 students studying at the Faculty of Dentistry, University of Health Sciences, in the 2023-2024 academic year.

Results: A total of 416 students completed the survey. The total mean HU-DBI score was 6.3±1.54. The mean HU-DBI scores were significantly higher in clinical classes (6.51±1.48) compared to preclinical classes (5.82±1.61) (p=0.001; p<0.01). Compared to the clinical students, preclinical students reported a significantly higher percentage of bleeding when they brush their teeth (p=0.001); they were bothered about their teeth color (p=0.0119; they thought that their teeth were getting worse even though they brushed them every day (p=0.006); and they postponed going to the dentist until their teeth hurt (p=0.001). Moreover, a significantly higher percentage of clinical students stated that their dentist has told them that they brush their teeth very well compared to the preclinical students (p=0.044).

Conclusion: Initiating oral health education programs at the start of dental education may be beneficial for improving students' oral health awareness and knowledge.

Keywords: Inventory, dental students, Turkiye

INTRODUCTION

Periodontal disease with more than 50% prevalence is a general health problem all around the world, which is also associated with numerous systemic problems such as diabetes mellitus and atherosclerozis.[1,2] Understanding the link between periodontal disease and systemic health increased the importance of periodontal status for systemic homeostasis. Therefore, trained and motivated oral-health care providers have an important role in the dissemination of true knowledge and attitudes regarding the subject.[2,3] Dental students are the future of oral healthcare, and they serve as role models for their families, friends, and patients with the responsibility of oral health promotion. In order to appropriately guide their patients, they must develop correct oral health attitudes and behaviors during their early years of education.[4] The setting in which dental students experience behavioral and motivational shifts about their oral self-care routines, has received less attention.[5] Although some studies have shown that, dental students' attitudes and behaviors are different in the preclinical and clinical years;[3,5-7] the others failed to show any differences.[8,9]

Hiroshima University Dental Behavioural Inventory (HU-DBI) is a validated and reliable instrument to facilitate assessment of health attitudes and behaviors among dental students in different educational systems developed by Kawamura.[10] This inventory has been translated into several languages to evaluate the oral health awareness of different countries. The original HU-DBI had good test-and-retest reliability in both Japanese and English versions.[11,12] Additionally, a previous study indicated that the Turkish translation of the HU-DBI matched the English form linguistically.[5] Due to variances in dental faculty curriculum and educational systems between faculties, the HU-DBI is a useful tool for characterizing oral health attitudes among dental students of different countries and different faculties.[6] Regarding the Turkish dental student population, only a few studies have examined the attitudes and behaviors of dental students and possible gender variations of different faculties.[3,5,6] In Turkiye, the duration of the dentistry faculty is five years. In our faculty, preclinical classes comprise years 1 and 2, whereas clinical classes are years 3, 4, and 5. Preclinical students take both preclinical laboratory and basic science courses, while the clinical students supervise and treat the patients under the supervision of academic staff.

In the recent decade, there has been a global trend towards the standardization of dental education.[13] To measure the

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progress of this trend, comparative studies will become more important to assess dental students' oral health behaviors and attitudes in different dental faculties. Moreover, recent studies have suggested that oral health behaviors may demonstrate gender differences, with men having poorer oral hygiene practices and fewer dental visits compared to women.[14,15]

The aim of this study is to evaluate the attitude and behavioral changes of dental students during their education using the HU-DBI survey. The hypotheses of the study were that students' attitudes and habits regarding oral health would change positively when shifting from preclinical to clinical classes, and their HU-DBI scores would increase. Additionally, HU-DBI scores would not differ between genders.

METHODS

The study was performed in compliance with the Helsinki Declaration and approved by the University of Health Sciences Hamidiye Scientific Researches Ethics Committee (Date: 13.06.2024, Decision No: 7/14). In order to evaluate students' attitudes and habits regarding oral health, the Turkish translation of the HU-DBI was used.[5] HU-DBI is a 20-question survey with two-choice answers (agree/disagree). 1st, 2nd, 3rd, 4th, and 5th grade students studying at the Faculty of Dentistry at the University of Health Sciences in the 2023-2024 academic year (a total of 537 students) were invited to the research. On the day the surveys administered, all students were informed about the content of the study at the end of the class period, and the access link of the survey were sent online to the class groups. The first part of the survey included an information form about the study's content, asking students who agreed to participate voluntarily to tick the relevant box on the form's first page.

Inclusion Criteria

1) Acceptance of participating in the study voluntarily,

2) Answering all questions,

3) Declaring birth dates and genders.

Exclusion Criteria

Incomplete filling out of questions and age-gender sections.

In calculating HU-DBI values; those who answered "I agree" to questions 4, 9, 11, 12, 16, 19 were given 1 point, and those who answered "I disagree" were given 0 points; Points will be collected by giving 1 point to those who answer "I disagree" to questions 2, 6, 8, 10, 14, 15, and 0 points to those who answer "I agree". The maximum HU-DBI value that could be obtained was 12, and a higher value indicated better oral health-related attitudes and behaviors.

Statistical Analysis

NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, frequency, ratio, minimum, maximum) were used when evaluating the study data. Pearson Chi-square and independent sample t tests were used for group comparisons. Significance was evaluated at $p<0.05$ level.

RESULTS

A total of 416 students participated in the study. 47.5% of the students were males (n=198), and 52.5% were females (n=218). Preclinical students constituted (1st, 2nd grade) 29.8% (n=124), whereas clinical students (3rd, 4th, and 5th grades) constituted 70.2% (n=292). Table 1 displays the percentage of responses and p values for all students.

15 out of 20 questions revealed no significant differences between preclinical and clinical students.

The answers to the questions "My gums have a tendency to bleed when I brush my teeth," "The color of my teeth bothers me," "I think my teeth are getting worse even though I brush them every day," and "I postpone going to the dentist until my tooth hurts" revealed a statistically significant difference($p=0.001$; $p=0.011$; $p=0.006$; $p=0.001$). The agree rate was found to be higher in preclinical classes compared to clinical classes. The answers to the question "My dentist says I brush my teeth very well" revealed a statistically significant difference ($p=0.044$; $p<0.05$). Clinical classes showed a higher agree rate (Table 1).

Total mean HU-DBI score was 6.3±1.54. The mean HU-DBI scores were significantly higher in clinical classes (6.51±1.48) compared to preclinical classes (5.82±1.61) ($p=0.001$; $p<0.01$) (Table 2).

DISCUSSION

The multifactorial nature of periodontal diseases underscores the significance of behavioral interventions.[7] Proper oral hygiene techniques and use of appropriate products according to individual needs', brushing duration, frequency, and regular professional visits have utmost importance for the sustainment of healthy oral conditions. Therefore, starting dental students' education about preventive dentistry in their early years is critical for the dissemination of true knowledge. The results of the present study revealed that preclinical students had worse self-reported oral health behaviors and dental visit habits than their clinical counterparts. Clinical students had a significantly higher overall mean HU-DBI score than preclinical students, with no gender differences. These findings were in line with the previous studies assessing the behavioral changes of dental students from preclinical to clinical classes and could be explained by the fact that education broadens students' knowledge of oral health, which may result in more positive attitudes and behaviors.[3,4,6,7]

Regarding gender differences, previous cross-sectional studies reported that while women attended the dentist more regularly for scheduled treatments or routine checks, men were less likely to visit the dentist and more likely to seek care for immediate issues like discomfort. In addition, men were less likely to seek preventative care and used healthcare services less frequently.[14,15] As a result, the present study also aimed to investigate the possible effect of gender on dental students' health attitudes and behaviors. Riad et al.,[8] reported no differences between gender and clinical-preclinical students in Estonian students, even though the total mean HU-DBI score was the highest to be reported in the literature. Also, Surme and Akman[6] reported gender as an influencing

Table 1. The analysis of the responses according to clinical and preclinical classes

		Groups				
		Clinical		Preclinical		
		n	%	n	%	[a]p
1. I don't worry much about visiting the dentist.	Disagree	224	76.7	104	83.9	0.102
	Agree	68	23.3	20	16.1	
2. My gums tend to bleed when I brush my teeth.	Disagree	244	83.6	78	62.9	0.001**
	Agree	48	16.4	46	37.1	
3. I worry about the color of my teeth.	Disagree	194	66.4	66	53.2	0.011*
	Agree	98	33.6	58	46.8	
4. I have noticed some white sticky deposits on my teeth.	Disagree	234	80.1	102	82.3	0.616
	Agree	58	19.9	22	17.7	
5. I use a child-sized toothbrush.	Disagree	280	95.9	116	93.5	0.307
	Agree	12	4.1	8	6.5	
6. I think that I cannot help having false teeth when I am old.	Disagree	268	91.8	116	93.5	0.536
	Agree	24	8.2	8	6.5	
7. I am bothered by the color of my gums.	Disagree	268	91.8	112	90.3	0.628
	Agree	24	8.2	12	9.7	
8. I think my teeth are getting worse despite my daily brushing.	Disagree	264	90.4	100	80.6	0.006**
	Agree	28	9.6	24	19.4	
9. I brush each of my teeth carefully.	Disagree	70	24.0	24	19.4	0.303
	Agree	222	76.0	100	80.6	
10. I have never been taught professionally how to brush.	Disagree	174	59.6	64	51.6	0.133
	Agree	118	40.4	60	48.4	
11. I think I can clean my teeth well without using toothpaste.	Disagree	244	83.6	106	85.5	0.624
	Agree	48	16.4	18	14.5	
12. I often check my teeth in a mirror after brushing.	Disagree	36	12.3	8	6.5	0.075
	Agree	256	87.7	116	93.5	
13. I worry about having bad breath.	Disagree	104	35.6	46	37.1	0.774
	Agree	188	64.4	78	62.9	
14. It is impossible to prevent gum disease with toothbrushing alone.	Disagree	102	34.9	38	30.6	0.397
	Agree	190	65.1	86	69.4	
15. I put off going to the dentist until I have a toothache.	Disagree	166	56.8	40	32.3	0.001**
	Agree	126	43.2	84	67.7	
16. I have used a dye to see how clean my teeth are.	Disagree	276	94.5	122	98.4	0.076
	Agree	16	5.5	2	1.6	
17. I use a toothbrush that has hard bristles.	Disagree	238	81.5	102	82.3	0.856
	Agree	54	18.5	22	17.7	
18. I don't feel I've brushed well unless I brush with strong strokes.	Disagree	220	75.3	86	69.4	0.205
	Agree	72	24.7	38	30.6	
19. I feel I sometimes take too much time to brush my teeth.	Disagree	210	71.9	96	77.4	0.245
	Agree	82	28.1	28	22.6	
20. I have had my dentist tell me that I brush very well.	Disagree	124	42.5	66	53.2	0.044*
	Agree	168	57.5	58	46.8	

[a]Pearson Chi-square test, **p<0.001, *p<0.05

Table 2. Comparison of HU-DBI scores between clinical and preclinical classes

	Groups		Total	
	Clinical	Preclinical		
	Mean±SD (Median)	Mean±SD (Median)	Mean±SD (Median)	[b]p
Total score	6.51±1.48 (7)	5.82±1.61 (6)	6.3±1.54 (6)	0.001**

[b]Independent samples test, **p<0.001, HU-DBI: Hiroshima University dental behavioral inventory, SD: Standard deviation

factor, with female dental students presenting with better responses to the questionnaire than male colleagues. We can attribute these controversial results to the different curricula of the countries, as well as potential cultural and gender differences. Regarding the dental students in Turkiye, present study revealed the mean HU-DBI score 6.3±1.54, which is comparable to the findings of Yildiz and Dogan[3] (6.53±1.99) and higher than the findings of Surme and Akman[6] (5.95±1.65) and Peker et al.[5] (6.25 clinical students; 5.59 preclinical students). When HU-DBI scores of the different

countries were examined from high to low are presented as: Estonia (8.09±1.22),[8] Switzerland (8.02±1.27),[16] Germany (7.67±1.32),[7] Finland (7.15±1.13),[11] Greece (6.86±1.83),[17] Japan (6.64±2.47),[11] Croatia (6.62±1.54),[18] Lithuania (6.35±1.43),[19] and China (5.07).[12] According to Komabayashi et al.,[12] cultural orientations could induce insightful findings in national comparisons of oral health attitudes and behaviors. Self-reported oral health behaviors appeared to differ significantly among the nations, which may have been caused by variations in student health education programs or cultural norms.

Clinical students more frequently disagreed with item 2, "My gums tend to bleed when I brush my teeth," compared to preclinical students. The enhanced understanding of periodontal disease prevention and the improvement of oral hygiene measures in clinical years can explain this finding.[2,3,6,7,18] Study results showed that preclinical students' oral health attitudes mirrored those of the Turkish population, where aesthetic appearance and lack of pain are major motivational factors.[5] With the progression from preclinical to clinical years, health attitudes and behaviors improve, which was seen as a decrease in worrying about the color of teeth, thought of the worsening of teeth despite daily brushing, and putting off going to the dentist until having a toothache. Moreover, over time, results revealed an increase in students' self-confidence, as evidenced by item 20 (I have had my dentist tell me that I brush very well). Clinical and preclinical students agreed with this item 57.5% and 46.8%, respectively, and the difference was statistically significant. This finding was in line with the previous studies conducted in Turkiye;[3,5,6] however, some of them reported no differences between the years.[7,18]

Limitations

The present study presented valuable data regarding the shifts in attitudes and behaviors of dental students during their education, with the following limitations: Although the response rate was high (77.49%), findings should be interpreted cautiously, since there are many other dental schools in İstanbul and the results may not reflect the general population. Furthermore, the possibility of giving better responses by the students than their actual status might have masked the real results, and study findings should be supported with a clinical assessment, which may be a topic of an another study.

CONCLUSION

Initiation of properly designed oral health promotion education programs at the beginning of dental education may be beneficial to improving preclinical students' oral health awareness. Further studies with increased participation are required to investigate the behaviors and attitudes of dental students throughout the different regions of Turkiye to evaluate the possible differences in curriculum.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the University of Health Sciences Hamidiye Scientific Researches Ethics Committee (Date: 13.06.2024, Decision No: 7/14).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Genco RJ, Sanz M. Clinical and public health implications of periodontal and systemic diseases: an overview. *Periodontol 2000*. 2020;83(1):7-13. doi:10.1111/prd.12344
2. Karem Hassan B, Jabbar Ali B, Mahmood Alwan A, Badeia RA. Self-reported oral health attitudes and behaviors, and gingival status of dental students. *Clin Cosmet Investig Dent*. 2020;12:225-232. doi:10.2147/CCIDE.S249708
3. Yildiz S, Dogan B. Self reported dental health attitudes and behaviour of dental students in Turkey. *Eur J Dent*. 2011;5(3):253-259.
4. Peker K, Bermek G. Predictors of health-promoting behaviors among freshman dental students at Istanbul University. *J Dent Educ*. 2011;75(3):413-420.
5. Peker K, Uysal O, Bermek G. Dental training and changes in oral health attitudes and behaviors in Istanbul dental students. *J Dent Educ*. 2010;74(9):1017-1023.
6. Surme K, Akman H. Evaluation of self-reported oral health attitudes and behavior of dental students in Antalya, Turkey. *Cureus*. 2023;15(8):e44387. doi:10.7759/cureus.44387
7. Riad A, Buchbender M, Howaldt HP, Klugar M, Krsek M, Attia S. Oral health knowledge, attitudes, and behaviors (KAB) of German dental students: descriptive cross-sectional study. *Front Med (Lausanne)*. 2022;9:852660. doi:10.3389/fmed.2022.852660
8. Riad A, Põld A, Olak J, et al. Estonian dental students' oral health-related knowledge, attitudes and behaviours (KAB): National survey-based study. *Int J Environ Res Public Health*. 2022;19(3):1908. doi:10.3390/ijerph19031908
9. Dagli RJ, Tadakamadla S, Dhanni C, Duraiswamy P, Kulkarni S. Self reported dental health attitude and behavior of dental students in India. *J Oral Sci*. 2008;50(3):267-272. doi:10.2334/josnusd.50.267
10. Kawamura M. Dental behavioral science. The relationship between perceptions of oral health and oral status in adults. *Hiroshima Daigaku Shigaku Zasshi*. 1988;20(2):273-286.
11. Kawamura M, Honkala E, Widström E, Komabayashi T. Cross-cultural differences of self-reported oral health behaviour in Japanese and Finnish dental students. *Int Dent J*. 2000;50(1):46-50. doi:10.1111/j.1875-595x.2000.tb00546.x
12. Komabayashi T, Kwan SY, Hu DY, Kajiwara K, Sasahara H, Kawamura M. A comparative study of oral health attitudes and behaviour using the Hiroshima University - Dental Behavioural Inventory (HU-DBI) between dental students in Britain and China. *J Oral Sci*. 2005;47(1):1-7. doi:10.2334/josnusd.47.1

13. Spielman AI. Dental education and practice: past, present, and future trends. *Front Oral Health*. 2024;5:1368121. doi:10.3389/froh.2024.1368121
14. Su S, Lipsky MS, Licari FW, Hung M. Comparing oral health behaviours of men and women in the United States. *J Dent*. 2022;122:104157. doi:10.1016/j.jdent.2022.104157
15. Lipsky MS, Su S, Crespo CJ, Hung M. Men and oral health: a review of sex and gender differences. *Am J Mens Health*. 2021;15(3):15579883211016361. doi:10.1177/15579883211016361
16. Wieslander V, Leles C, Srinivasan M. Evaluation of oral-health behavioral attitudes of dental students in Switzerland and Brazil. *J Oral Sci*. 2021;63(4):326-329. doi:10.2334/josnusd.21-0188
17. Polychronopoulou A, Kawamura M, Athanasouli T. Oral self-care behavior among dental school students in Greece. *J Oral Sci*. 2002;44(2):73-78. doi:10.2334/josnusd.44.73
18. Badovinac A, Božić D, Vučinac I, Vešligaj J, Vražić D, Plancak D. Oral health attitudes and behavior of dental students at the University of Zagreb, Croatia. *J Dent Educ*. Sep 2013;77(9):1171-1178.
19. Pacauskiene IM, Smailiene D, Siudikienė J, Savanevskyte J, Nedzelskiene I. Self-reported oral health behavior and attitudes of dental and technology students in Lithuania. *Stomatologija*. 2014;16(2):65-71.