

Original Research Article

Attitude and Behavior of Oral Hygiene among Taif University Students - A questionnaire study

¹Fahad Abdualghani Awadh Athobaiti, ^{*2}Bhari Sharanasha Manjunatha, ³Holenarasipur Vasantakumar Amith, ⁴Ammar Saleh Alshamrani, ⁵Hezam Ali Hezam Alotaibi, ⁶Mohammed Mastour Radda Alharthi and ⁷Ahmed Talal Moutlq Alhumaidi

Abstract

1,5,6,7→ Intern

2Professor (Associate) in Oral Biology, Dept of Basic Oral Medicine and Allied Basic Dental Sciences

3Assistant Professor, Preventive Dentistry

4Dean and Associate Professor, Advance Restorative Dentistry

1,2,3,4,5,6,7→ College of Dentistry, University of Taif, Al Hawaiiah, Kingdom of Saudi Arabia.

*Corresponding Author's E- mail: drmanju26@hotmail.com

Corresponding Author:
Dr. Bhari S. Manjunatha

Address: Professor (Associate) in Oral Biology, College of Dentistry, Al-Hawiyah, University of Taif, Taif- 21944, Kingdom of Saudi Arabia

The attitude, behavior and the oral hygiene of health care providers reflect their understanding of the importance of preventive dental procedures and improving the oral health of their patients. These findings differ among the students pursuing various programs and such studies are very important in the present global trend of standardization of dental education and require inclusion of oral health promotion in dental practice. Students of health care are the future professionals who are expected to be teacher of hygiene as well as role models of self-care regimens for their patients. There is very little information or research about the oral hygiene attitude and behavior or practices that influence oral health among university students of various programs from Kingdom of Saudi Arabia (KSA). Hence, this study was aimed to add to the limited literature documenting the oral hygiene practices and attitudes among students pursuing programs in various streams of medical and allied sciences at Taif University, KSA. A descriptive cross-sectional questionnaire study was carried out among 500 students of streams of Medical, Dental, Pharmacy, Physiotherapy and Nursing colleges at Taif University, KSA, with the English version of the preformed set of modified questionnaire consisting of 27 questions as per Hiroshima University- Dental Behavioral Inventory (HU-DBI). A quantitative estimate of oral health attitude and behavior is provided by the total of the appropriate responses. The data was computerized and analyzed. Differences in responses were assessed using chi-square. The level of significance was set at $P < 0.05$. The responses were recorded and analysed. The difference in responses to all the questions was statistically significant ($P < 0.05$). In comparison of the streams the medical students had the highest mean score. The differences in the mean scores were statistically significant (Kruskallwallis test). The difference in the mean scores of clinical and preclinical students was not statistically significant (Man Whitney U test). In the present study, the overall, significant differences of the mean HU-DBI scores of students of dental, medical, pharmacy and other allied sciences were observed. Higher scores indicate better oral health attitude and behavior. The data might help and may be used to improve practice of students' oral hygiene and serve as a positive model for the patients, their family and friends.

Keywords: Attitude and behavior, Dental Hygiene, Hiroshima University Dental Behavioral Inventory (HU-DBI), Oral Health

INTRODUCTION

Dental health is very much personal and the perception of which is very much affected by individual's culture and socio-economic status. The condition of the oral cavity

reflects the attitude and behavior towards oral health (Davis, 1980). The oral health attitudes and behaviors varied among the students pursuing programs in

Dentistry, dental hygiene, dental technician and pharmacy. Such studies are very important in the present global trend of standardization of dental education and require inclusion of oral health promotion in dental practice (Baseer et al., 2013; Al-Wahadni et al., 2004; Santosh et al., 2012). There is very little information or research from Kingdom of Saudi Arabia (KSA) about the attitude and behavior of oral hygiene or practices that influence Oral health among university students of various programs. Thus, present study was planned to append to the little available literature about the oral hygiene practices and attitudes among students pursuing programs in Medical, Dental, Pharmacy, Physiotherapy and Nursing Schools at Taif University, KSA and to compare oral health attitudes between non dental and dental students.

MATERIALS AND METHODS

A total of 500 undergraduate students of Medical, Dental, Pharmacy, Physiotherapy and Nursing at Taif University were requested to participate in the survey. This is a type of cross sectional/observational questionnaire study. Data on oral health behavior were collected using the English version of the Modified Hiroshima University-Dental Behavioral Inventory (HU-DBI) questionnaire, which was originally developed by Kawamura (1988). In the present study, the modified HU-DBI (Kawamura, 1988) questionnaire (Table 1) consists of 27 items primarily associated with tooth brushing behavior, all with a dichotomous response format (agree/disagree).

Hence this study is aimed to compare the attitude, behavior and oral health status among 500 students of Medical, Dental, Pharmacy, Physiotherapy and Nursing Schools at Taif University, KSA using modified HU-DBI questionnaire (Table 1). The students are selected randomly from the respective study streams and this quota samples a type of non probability sample.

Inclusion Criteria

Students who gave consent for the study.

Exclusion Criteria

Students in which regular oral health is not possible in few instances such as restricted mouth opening, students undergoing major or minor oral surgery or due to any other pathologies.

The study was conducted after the approval from Ethical Committee of the Faculty (college) and the research committee of University. All the participants were informed about the nature of the study and its importance. Interested students were given question-

naires in English language. A Total of 500 questionnaire forms were received with completed responses. The survey was completed anonymously, and no personal or demographic information was collected.

RESULTS

Responses to a 27 item self administered questionnaire were obtained from medical, dental, nursing, physiotherapy and pharmacy students of Taif University, KSA. The students were further divided into preclinical and clinical, based on their specialities. A total of 500 students participated in the survey. Response rate was 100%.

The responses were recorded on a 5 point likert scale ranging from totally disagree to totally agree. The responses were coded and entered into SPSS version 20 and analysed. Table 2 is showing analysis of Agree-Disagree responses to all the questions by students of various streams of study at Taif University, KSA. The difference in responses to all the questions was statistically significant ($P < 0.05$). Table 3 gives the distribution (number and percentage) of subjects in various streams and specialities belonging to preclinical or clinical specialities.

Tables 4a and 4b compares the mean scores of the response of the participants. The likert scale was consisted to agree and disagree dichotomous scale and recoded. To calculate the mean scores, one point was given for each of the agree responses for questions 3-6,8,10,11,14-18,20-22,26,27 and one point was given for each of the disagree responses for questions 1,2,7,9,12,13,19,23-25. In comparison of the streams the medical students had the highest mean score. The differences in the mean scores were statistically significant (Kruskallwallis test) as shown in Table-4a. Among the specialities, preclinical students had a better mean score. But, the difference in the means was not statistically significant (Man Whitney U test) and is indicated in Table-4b.

In the present study, the overall, significant differences of the mean HU-DBI scores of students of dental, medical, pharmacy and other allied sciences were observed (Table-4a). Statistically significant differences were found for items 1,2,4,6,8,9,11,14,15,20,24 and 25 between the two clinical and preclinical groups as shown in the Figure 1.

Most of the medical stream students were not much worried about visiting a dentist (Item #1), compared to other students ($p < 0.01$). However, most students of medical, dental, pharmacy and nursing reported that they are bothered about the color of my gums' (Item #5). Maximum students from dental and medical stream were 'worried about their teeth getting worse despite daily brushing' (Item #6). Medical and dental students knew that 'brushing for long time will damage the tooth

Table 1. Modified HU-DBI questionnaire

Questions:	Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree
1. I do not worry much about visiting the dentist					
2. I do worry if my gums bleed during brushing					
3. I do worry about the color of the teeth					
4. I am concerned about sticky deposits on my teeth					
5. I am bothered by the color of my gums					
6. I am worried that my teeth are getting worse despite my daily brushing					
7. Spending too much time on brushing will damage the tooth structure					
8. I have never been taught professionally how to brush					
9. I think I can clean my teeth well without using toothpaste					
10. I often check my teeth in a mirror after brushing					
11. I am bothered about having bad breath					
12. It is impossible to prevent gum disease with tooth brushing alone					
13. Brushing of teeth with strong strokes is not ideal					
14. Use of tooth brush with hard bristles will damage the gums					
15. It is not necessary to visit a dentist until I get a tooth ache					
16. I feel sometimes I take too much time to brush my teeth					
17. I have had my dentist tell me that I brush very well					
18. Brushing the teeth twice daily is ideal					
19. Eating sweets does not affect oral hygiene					
20. I use dental floss regularly					
21. Mouth wash should be used daily					
22. Frequent drinking of carbonated drinks has ill effects on oral hygiene					
23. I am satisfied with the appearance of my teeth					
24. I am bothered about chewing tobacco					
25. I am concerned about the ill effects of smoking					
26. I attend oral health camps regularly					
27. Is it necessary to create awareness of dental problems amongst people					

Table 2. Distribution of questionnaire items by agree responses based on stream

Items	Students of various schools of Taif University					P value*
	Medical	Dental	Pharmacy	Nursing	Physiotherapy	
1	118	35	63	69	70	0.010
2	141	49	56	65	59	0.000
3	141	49	81	72	66	0.000
4	141	49	54	48	42	0.000
5	141	49	86	91	59	0.000
6	141	49	57	65	74	0.000
7	141	49	62	71	53	0.000
8	141	49	89	94	74	0.000
9	141	49	90	80	97	0.000
10	141	49	73	80	63	0.000
11	126	34	57	94	49	0.000
12	132	46	59	71	87	0.000
13	114	47	69	70	83	0.001
14	126	47	96	74	75	0.000
15	96	37	62	82	94	0.000
16	111	31	60	76	89	0.000
17	97	42	60	86	69	0.000
18	118	47	82	71	75	0.002

Table 2. Continue

19	115	44	92	84	75	0.000
20	121	33	80	47	59	0.000
21	120	34	64	66	80	0.000
22	114	26	73	69	79	0.000
23	141	49	68	74	77	0.000
24	141	49	89	93	70	0.000
25	141	49	64	65	75	0.000
26	141	49	89	93	74	0.000
27	128	47	53	73	82	0.000

*All p values are significant

Table 3. Distribution of students according to stream and specialization

Characteristics	Grouping		
	Stream of Study	Number (N)	Percentage %
Stream	Medical	150	30.0
	Dental	50	10.0
	Pharmacy	100	20.0
	Nursing	100	20.0
	Physiotherapy	100	20.0
Specialty	Pre-clinical	258	51.6
	Clinical	242	48.4

Table 4a. Comparison of mean scores across groups

Stream	Mean	N	Std. Deviation	Mean rank	Chi square value	p Value
Medical	15.72	150	1.405	288.41	26.159	.000
Dental	15.10	50	1.581	236.62		
Pharmacy	15.04	100	1.974	237.00		
Nursing	15.39	100	2.478	265.68		
Physiotherapy	14.57	100	2.090	198.91		
Total	15.23	500	1.966			

Kruskal Wallis Test

Table 4b. Comparison of mean scores across groups

Specialty	Mean	N	Std. Deviation	Mean Rank	Mann-Whitney U	p Value
Preclinical	15.28	258	1.904	252.26	30763.5	0.776
Clinical	15.17	242	2.034	248.62		
Total	15.23	500	1.966			

Mann Whitney U test

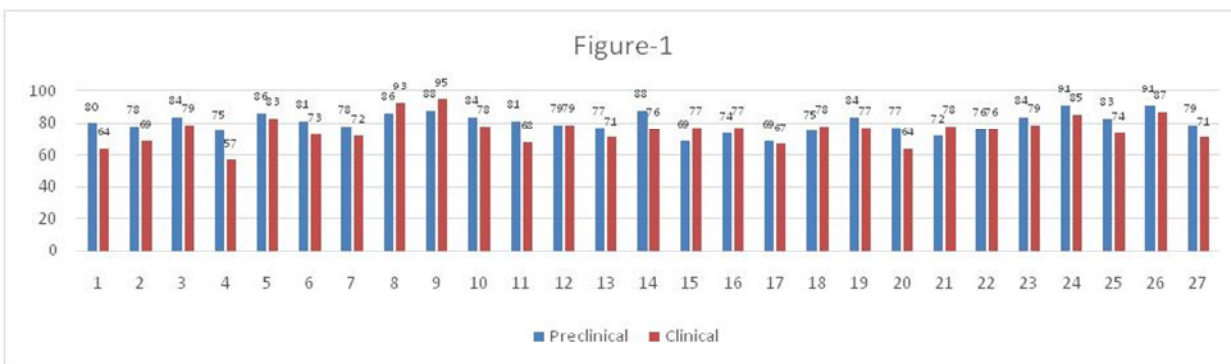


Figure 1. Shows responses for different question among clinical and preclinical students

structure' (Item #7). More than 70% of students from all streams reported that they 'have never been taught professionally how to brush' (Item #8), including dental students ($p < 0.00$).

Dental students were most likely to agree on questions like, "I worry about the color of my teeth" (#3), "I think my teeth are getting worse despite my daily brushing" (#6), and "use of toothbrush which has hard bristles will damage gums" (#14). The dental students were likely to explore more preventative measures of oral care, which would lead to better knowledge regarding questions #3, #6 and #14. It is assumed that the increased response to question #12 among dental students is that the students, who give tooth brushing instructions to patients in phases II and III, have developed an understanding that the mechanical removal of dental plaque does not depend only on toothpaste use.

The analysis of items (#18, #20 and #21) related to oral-health related behavior (tooth brushing, mouth wash and flossing) showed good response. All these oral health self-care levels may have been positively influenced by the education/course content related to health sciences.

A small percentage of students from all streams didn't care about ill effects of smoking and tobacco chewing (Items #25 and #24). The result of #27 implies dental education influences the awareness of not only caries prevention but also periodontal disease prevention.

DISCUSSION

The concept of oral and dental health is very important and personal entity. The awareness and behavior of this concept is very much influenced by individual's culture and socioeconomic status. The attitude toward their own teeth by the dentist plays an important and a positive influencing role in determining the oral health condition of the population (Davis, 1980).

One of the most common objectives of teaching in Preventive and Community Dentistry is to train to

motivate patients and community to adopt good oral hygiene practices [6]. It is believed that oral health behaviour plays a significant role in the health education of individuals and groups (McGonaughy et al., 1991; Uitenbroek et al., 1989).

There is no worldwide accepted or recommended index for measuring dental attitude and behavior. The Hiroshima University-Dental Behavioral Inventory (HU-DBI) has been used to examine the oral health-related attitudes and behavior of dental students in different countries and is developed by Kawamura. The English version has also shown good test-retest reliability and translation validity (Kawamura, 1988). HU-DBI was first used in Japan and showed to be useful method in understanding the awareness and oral health behavior of patients. There was no published data available from the Kingdom of Saudi Arabia, on the assessment of level of oral health attitudes and behavior of students of medical, dental and paramedical streams.

Doshi *et al.* (2007) showed that medical and dental students had better attitudes towards oral health behavior than their engineering counterparts (Doshi et al., 2007). In addition, Kumar Tadakamadla *et al.* (2010) also reported that dental students exhibited better HU-DBI scores than students of other streams (Kumar et al., 2010).

The present study is in accordance to two previous studies which observed similar results (Doshi et al., 2007; Kumar et al., 2010). Information on oral health promotion and maintenance is necessary for health-related behavior (Levin and Shenkman, 2004). Oral health behavior consists of both individual and professional care and that includes tooth brushing, dental flossing, visiting dentist and following proper diet (Steptoe et al., 1994). Research on dental students has shown that the oral health attitudes and behaviors differed between preclinical and clinical years of training (Peker et al., 2010) and it differed among different cultures and countries (Kawamura et al., 2001; Komabayashi et al., 2005).

A favorable attitude and behavior toward oral health reflected students' clinical training experience (Kawamura

et al., 1997). Based on logistic regression, it is speculated that these results can be attributed to the formal dental education mainly in preventative dentistry and oral hygiene courses. Dental students can also be assumed to have been concerned about tooth care before entering their dental programs.

Oral diseases mainly dental caries and periodontal disease present major public health problems worldwide. Such health issues need a major public/community oral health promotion and planned efforts in improving oral health behavior. This has been recognized by the World Health Organization (WHO) (Petersen et al., 2005). We believe that increase in awareness of oral health of a dental student will have a direct influence on patients and help to generate oral awareness in the general population. The majority of patients' involvement in oral health is entirely behavioral. Even though the plaque control measures are simple, the population doesn't follow them effectively; as a result develop dental caries and periodontal disease (Schüz et al., 2009). Nevertheless, the dental health care services, public health education level and oral health habits could affect the oral health of the patients.

CONCLUSION

The results of this study indicate that the knowledge of Oral Health must be included in any national program that promotes in preventive oral care for children in schools and colleges and oral health educational programs for community aimed at the general public. The suggestion is based on the finding that Medical, Dental and paramedical students are aware of the importance of dental care; however, the perceptions and knowledge of general public seemed to significantly affect the frequency and the reason for their dental visits. Nevertheless, caution should be exercised not to generalize the findings from one school in this study to the other schools

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

REFERENCES

- Al-Wahadni AM, Al-Omiri MK, Kawamura M (2004). Differences in self-reported oral health behavior between dental students and dental technology/dental hygiene students in Jordan. *Journal of Oral Science*;46:191-7.
- Baseer MA, Rahman G, Kawaey ZA, Awamy BA, Manmeen ZA, Shalaty FA (2013). Evaluation of Oral Health Behavior of Female Dental Hygiene Students and Interns of Saudi Arabia by Using Hiroshima University Dental Behavioural Inventory (HU-DBI). *Oral Health Dent Manag.* 12(4):255-61.
- Davis P (1980). *Social Context of Dentistry*. Long Wood publishing group. London. p. 21-27
- Doshi D, Baldava P, Anup N, Sequeira PS (2007). A comparative evaluation of self-reported oral hygiene practices among medical and engineering university students with access to health promotive dental care. *J Contemp Dent Pract*;8(1):68-75.
- Kawamura M (1988). Dental behavioral science. The relationship between perceptions of oral health and oral status in adults. *J Hiroshima Univ Dent Soc*;20(2):273-86.
- Kawamura M, Iwamoto Y, Wright FAC (1997). A comparison of self-reported dental health attitudes and behavior between selected Japanese and Australian students. *J Dent Edu*, 61:354-60.
- Kawamura M, Yip HK, Hu DY, Komabayashi T (2001). A cross-cultural comparison of dental health attitudes and behaviour among freshman dental students in Japan, Hong Kong and West China. *International Dental Journal*.;51:159-163.
- Komabayashi T, Kwan SY, Hu DY, Kajiwara K, Sasahara H, Kawamura M (2005). 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. *Journal of Oral Science*.;47:1-7.
- Kumar TS, Kriplani D, Shah V, Tadakamadla J, Tibdewal H, Duraiswamy P, Kulkarni S (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):195-202.
- Levin L, Shenkman A (2004). The relationship between dental caries status and oral health attitudes and behavior in young Israeli adults. *J. Dental Edu.*; 68: 1185-91.
- Maaatouk F, Maaatouk W, Ghedira H, Ben Mimoun S (2006). Effect of 5 years of dental studies on the oral health of Tunisian dental student. *Eastern Mediterr Health J*;12(5):625-31.
- McGonaughy FL, Lucken KM, Toevs SE (1991). Health promotion behaviors of private practice dental hygienists. *J Dent Hyg*;65(5): 222-30.
- Peker K, Uysal O, Bermek G (2010). Dental training and changes in oral health attitudes and behaviours in Istanbul dental students. *J. Dental Edu.* 74:1017-23.
- Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C (2005). The global burden of oral diseases and risks to oral health. *Bull World Health Organ.*;83:661-9.
- Santosh Kumar, Busaly IA, Tadakamadla J, Tobaigy F (2012). Attitudes of dental and pharmacy students to oral health behaviour at Jazan University, Kingdom of Saudi Arabia. *Archives of Orofacial Sciences.*;7:9-13.
- Schüz B, Wiedemann AU, Mallach N, Scholz U (2009). Effects of a short behavioural intervention for dental fl ossing: randomized-controlled trial on planning when, where and how. *J Clin Periodontol*;36:498-505.
- Steptoe A, Wardle J, Vinck J, Tuomisto M, Holte A, Wichstorm L (1994). Personality and attitudinal correlates of healthy and unhealthy lifestyles in young adults. *Psychology & Health.*; 9: 331-43.
- Uitenbroek DG, Schaub RM, Tromp JA, Kant JH (1989). Dental hygienists' influence on the patients' knowledge, motivation, self-care, and perception of change. *Community Dent Oral Epidemiol*;17(2): 87-90.