Original Article

Oral Health Behaviours, Knowledge and Attitudes Among Dental College Students in Sulaimani City, Iraq

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Abstract

Objectives: The present study aimed to investigate the oral health behavior, knowledge, and attitudes of dental college students.

Methods: A self-assessment questionnaire was used in this study. Participants were divided into two groups according to their level of study (pre-clinical and clinical).

Results: A total of 140 students participated in the study, with 79(56%) pre-clinical and 61(44%) were at the clinical levels. The majority of students reported brushing their teeth (90.7%) with no association between toothbrushing behavior and gender or level of study (P>0.05). The most common tooth brushing frequency was twice daily with no gender association (P>0.05), and a higher percentage of students at clinical levels of the study reported brushing their teeth more than twice daily (P<0.05). The majority of students reported using fluoridated toothpaste (60.7%). In total, about half of the students reported using dental floss with a significant association with the level of study (P<0.01). Tongue cleaning was reported by 69.3% of the students, and about half of the students reported using mouthwashes, and one-fourth of the students reported using Miswak. In total, about half of the students reported their oral health status as “Good”. Routine dental visits and the level of the study were significantly associated (P<0.01).

Conclusions: Noticeable differences in oral health behaviors could not be concluded on a statistical basis. Nevertheless, there were areas of oral health behaviors where increased knowledge showed an improvement in health behavior. It is recommended that preventive programs, including self-care regimes, be started from the first year of dental education.

Keywords: *Oral health behavior, Oral hygiene practice, Oral health attitude, Oral Health, Dental students.*

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Introduction

Dental college students are expected to be educators of oral hygiene and role models of self-care procedures for their patients, families, and the community as their dental education progress in the college[1]. Oral health is an essential part of human's general health, and routine oral hygiene practices are an effective preventive measure to achieve good oral and general health[2]. Dental professionals who have assimilated the knowledge and feel a sense of personal control over their oral health are more likely to adopt self-care behavior. The oral health ideas and attitudes of dental college students, as forthcoming dental care providers, affects their oral self-care habits and possibly affect their patient's ability for oral hygiene practices and shape the public's oral health education level and oral hygiene practices[1–4].

Dentists and other health professionals realize that oral health cannot be separated from the general health of the hospitalized patient. Many oral conditions are intimately related to systemic diseases. Optimally, total health care requires the combined efforts of the medical and dental professions[5]. This, in turn, impacts the public's understanding of preventive oral health measures[6]. Kawamura et al. (2001) advised that undergraduate dental education should include comprehensive educational programs in preventive dental care that empowers dentists to motivate patients for oral self-care in addition to programs that ensure dental students also establish oral self-care regimens[6]. Such educational effort should enable dental students to develop stable health behaviors [3] which are not influenced by individual characteristics[7].

It is known that in the complex interplay of factors that shape attitudes and health behaviors, two major influences have been identified: one is learned experience, and the other is culturally determined attitudes/beliefs/behaviors (social norms)[8,9]. In the context of students' oral health attitudes and behaviors, the learned experience is equated with dental education and its curriculum. At the same time, social norms are established and reinforced by non-dental education[1].

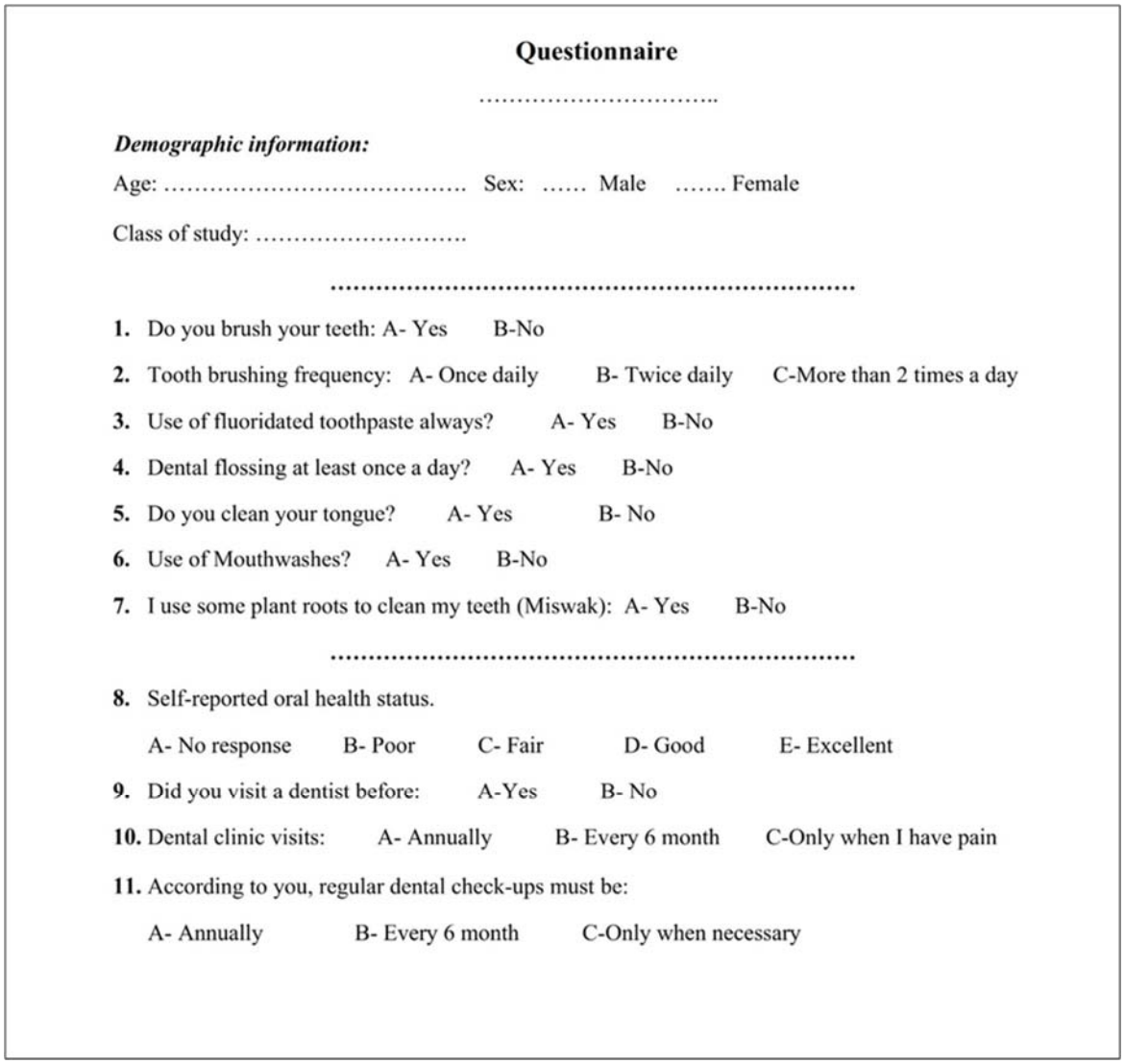
Health-related behaviors affect oral and dental diseases. The prevalence and severity of dental caries and periodontal disease have been shown to decrease with improvements in oral hygiene and a decrease in the consumption of carbohydrates and sugar products[10]. However, this favorable trend in reducing dental caries has not been seen in several developing countries or the Middle East[10–12]. A relationship between knowledge, attitude, and practices has been previously studied and demonstrated[13]: knowledge, attitude, understanding, and competency are predispositions to act. The relation between knowledge, attitude, and practice seem stronger among professionals than unprofessional people[4,6]. The place and importance of background factors that may inform socialization processes cannot be overlooked[2]. There are differing reports on the possible impact of professional education on the frequency of sugar consumption[2,14].

Comprehensive educational programs in preventive care, including oral self-care hygiene procedures, should be an essential part of undergraduate dental education[15]. Professional education of dental students should create stable health behaviors [3] which overcome differences in personal characteristics[7,16]. Since students of dentistry colleges will provide dental care services and be responsible for public oral health education in the future, it is important to study their current oral health behavior (OHB) to determine how much value their place on the prevention of oral diseases[17]. The objectives of the present study were to investigate the oral health behavior and oral health attitudes of Sulaimani dental students in Iraq and its relation to gender and level of study.

Materials and methods

A self-assessment questionnaire was used as a survey instrument for this study. The questionnaire used in the study was revised based on ease of understanding and interpretation of the contents of the questionnaire during a pilot study among a group of 10 students. A modified questionnaire in the English language, derived from Cortes et al.[4] and Halawany et al.[18] was used for this study.

The questionnaire was distributed among students of the College of Dentistry at the University of Sulaimani, Iraq. The students were asked to participate voluntarily in the study. No attempt was made to follow up with students absent from the survey or refused to participate in the study. Participated students were divided into two groups according to their level of study at the college. Undergraduate students take five academic years of study; the first two years are considered pre-clinical, and the last three years of study are considered clinical.



Questionnaire

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Demographic information:

Age: …… Sex: …… Male ……. Female

Class of study: ……

……

1. Do you brush your teeth: A- Yes B-No
2. Tooth brushing frequency: A- Once daily B- Twice daily C-More than 2 times a day
3. Use of fluoridated toothpaste always? A- Yes B-No
4. Dental flossing at least once a day? A- Yes B-No
5. Do you clean your tongue? A- Yes B- No
6. Use of Mouthwashes? A- Yes B-No
7. I use some plant roots to clean my teeth (Miswak): A- Yes B-No

……

8. Self-reported oral health status.

   A- No response B- Poor C- Fair D- Good E- Excellent
9. Did you visit a dentist before: A-Yes B- No
10. Dental clinic visits: A- Annually B- Every 6 month C-Only when I have pain
11. According to you, regular dental check-ups must be:

    A- Annually B- Every 6 month C-Only when necessary

Figure 1: The questionnaire was used in this study.

Before the survey was given out, verbal consent was received from those students who volunteered to take the survey. Questionnaires regarding oral health attitudes and behavior were distributed to the students. They were asked to fill in the questionnaire, and the completed questionnaires were collected.

The questionnaire included background information regarding age, gender, and year of study. The level of dental education (level of study) was divided into two categories; Preclinical (first and the second year of study) and Clinical level (third, fourth and fifth year of study). In addition to the background information, the questionnaire required information on participants' oral health attitudes and behaviors. The background information, oral health behavior, and oral health attitude questions were inscribed in the questionnaire are presented in Figure 1.

Ethical approval was obtained from the College of the Dentistry/ University of Sulaimani.

Statistical Analysis

The statistical analysis included descriptive and inferential statistics. A Chi-square test was used to assess the students' responses on each item of the questionnaire with gender and their level of study. The analyses were performed using SPSS version 25 for Windows (SPSS Inc, Chicago, IL, USA), and the level of statistical significance was set at 5%.

Results

The age of the dental students ranged between 18 and 25 years, with a mean age of 20.18 ± 1.82 years. A total of 140 students participated in the study across all the five classes of the University of Sulaimani/ College of

Dentistry, 50(36%) Males and 90(64%) Females with 79(56%) students were at pre-clinical levels of the college (1st and 2nd year of study), and 61(44%) were at the clinical levels of their study at the college (3rd, 4th and 5th year of study). The distribution of the participated students is shown in Table 1.

The majority of students reported brushing their teeth 127 (90.7%) with no association between tooth brushing behavior and gender or level of study (P>0.05). The most common tooth brushing frequency was twice daily, 72 (56.6%) with no gender association (P>0.05). Yet, a higher percentage of females (59%) than males (52.3%) reported a typical brushing frequency twice a day. However, there was a statistical association between toothbrushing frequency and the level of study, as a higher percentage of students at clinical levels of the study reported brushing their teeth more than twice daily (P<0.05). The majority of students reported using fluoridated toothpaste (60.7%) with no statistical association between the use of fluoridated toothpaste and gender and level of study (P>0.05), Table 2.

In total, about half of the students (49.3%) reported using dental floss daily with no gender association (P>0.05). Nevertheless, using dental floss was highly significantly associated with the level of study as nearly two-thirds of the students (63.9%) in the clinical levels of the study reported using dental floss versus about one-third (38%) of the students in pre-clinical levels (P<0.01), Table 2.

Tongue cleaning was reported by 69.3% of the students. Although higher percentages of females (73.3%) versus 62% for males and students at clinical levels (70.5%) versus 68.4% for pre-clinical level students reported tongue cleaning behavior, no statistical association was found between gender and level of study with this behavior (P>0.05). Furthermore, about half of the students (45%) reported using mouthwashes, and one-fourth (24.3%) of the students reported using Miswak. Still, no statistically significant association was found with gender or level of study (P>0.05), Table 2.

In total, about half of the students (52.9%) at both genders and both levels of the study reported their oral health status as “Good”. Still, no statistically significant association was found with gender or level of study (P>0.05). Although statistically not significant association (P>0.05) was found between routine dental visits and gender, the majority of the students (83.6%) reported a previous visit to a dentist. More males (60%) reported visiting a dentist only when they have pain, while females seem to be more conservative, and collectively more females reported visiting a dentist every 6months (37.8) or annually (18.9%). On the other hand, a highly significant association (P<0.01) was found between routine dental visits and the level of the study as only about one-third of the clinical students reported visiting a dentist only if having pain versus about two-thirds (62%) of the pre-clinical level of students. Regarding their opinion on routine dental visits, most students (69.3%) reported that patients should have a dental visit every 6months, Table 3.

Table 1: Distribution of the participated students according to sex, class of study and level of study.

Class and level of study	Sex (n, %)		Total (n, %)
	Male	Female	
1	23 (46)	33 (37)	56 (40)
2	5 (10)	18 (20)	23 (16)
Preclinical	28 (56)	51 (57)	79 (56)
3	13 (26)	20 (22)	33 (24)
4	4 (8)	11 (12)	15 (11)
5	5 (10)	8 (9)	13 (9)
Clinical	22 (44)	39 (43)	61 (44)
Total	50 (36)	90 (64)	140 (100)

Table 2. Tooth brushing and oral health behaviors of the dental students according to gender and level of study.

Distribution of responses (n, %)					
	Male	Female	Pre-clinical	Clinical	Total
Tooth brushing behavior					
Tooth brushing?					
Yes	44 (88)	83 (92.2)	70 (88.6)	57 (93.4)	127 (90.7)
No	6 (12)	7 (7.8)	9 (11.4)	4 (6.6)	13 (9.3)
Level of significance	0.544		0.328		
Tooth brushing frequency?					
Once daily	20 (45.5)	26 (31.3)	27 (38.6)	19 (33.3)	46 (36.2)
Twice daily	23 (52.3)	49 (59)	42 (60)	30 (52.6)	72 (56.6)
More than twice daily	1 (2.3)	8 (9.6)	1 (1.4)	8 (14)	9 (7.1)
Level of significance	0.134		0.023*		
Use of toothpaste always?					
Yes	28 (56)	57 (63.3)	43 (54.4)	42 (68.9)	85 (60.7)
No	22 (44)	33 (36.7)	36 (45.6)	19 (31.1)	55 (39.3)
Level of significance	0.395		0.083		
Oral health behavior					
Dental flossing at least once daily?					
Yes	21 (42)	48 (53.3)	30 (38)	39 (63.9)	69 (49.3)
No	29 (58)	42 (46.7)	49 (62)	22 (36.1)	71 (50.7)
Level of significance	0.199		0.002**		
Do you clean your tongue?					
Yes	31 (62)	66 (73.3)	54 (68.4)	43 (70.5)	97 (69.3)
No	19 (38)	24 (26.7)	25 (31.6)	18 (29.5)	43 (30.7)
Level of significance	0.164		0.786		
Use of mouthwashes?					
Yes	23 (46)	40 (44.4)	39 (49.4)	24 (39.3)	63(45)
No	27 (54)	50 (55.6)	40 (50.6)	37 (60.7)	77 (55)
Level of significance	0.859		0.237		
Use of Miswak?					
Yes	13 (26)	21 (23.3)	16 (20.3)	18 (29.5)	34 (24.3)
No	37 (74)	69 (76.7)	63 (79.7)	43 (70.5)	106(75.7)
Level of significance	0.724		0.205		

* Significant association.

** Highly significant association.

Table 3. Oral health attitudes of the dental students according to the gender and level of study.

Distribution of responses (n, %)					
Oral health attitude	Male	Female	Pre-clinical	Clinical	total
Self-reported oral health status?					
Don't know	8 (16)	4 (4.4)	5 (6.3)	7 (11.5)	12 (8.6)
Poor	4 (8)	14 (15.6)	10 (12.7)	8 (13.1)	18 (12.9)
Fair	10 (20)	18 (20)	14 (17.7)	14 (23)	28 (20)
Good	24 (48)	50 (55.6)	44 (55.7)	30 (49.2)	74 (52.9)
excellent	4 (8)	4 (4.4)	6 (7.6)	2 (3.3)	8 (5.7)
Level of significance	0.112		0.568		
Did you visit a dentist before?					
Yes	39 (78)	78 (86.7)	62 (78.5)	55(90.2)	117 (83.6)
No	11 (22)	12 (13.3)	17 (21.5)	6 (9.8)	23 (16.4)
Level of significance	0.185		0.064		
Dental clinic visits?					
Annually	7 (14)	17 (18.9)	10 (12.7)	14 (23)	24 (17.1)
Every 6 months	13 (26)	34 (37.8)	20 (25.3)	27 (44.3)	47 (33.6)
Only when I have pain	30 (60)	39 (43.3)	49 (62)	20 (32.8)	69 (49.3)
Level of significance	0.166		0.003		
According to you, regular dental check-ups must be?					
Annually	3 (6)	15 (16.7)	10 (12.7)	8 (13.1)	18 (12.9)
Every 6 months	34 (68)	63 (70)	56 (70.9)	41 (67.2)	97 (69.3)
When I have pain	13 (26)	12 (13.3)	13 (16.5)	12 (19.7)	25 (17.9)
Level of significance	0.056		0.873		

reported in the dental health self-care practices among students from different countries and cultural groups[21].

Discussion

One of the common objectives of teaching dentistry is to motivate patients to implement good oral hygiene practices[18]. One of the most important responsibilities of oral health providers is advising the patients and raising their awareness on how to prevent oral diseases by adapting the correct oral-care habits[19]. The dental students could motivate and educate patients to adapt correct oral-care behaviors and practice oral hygiene care routines unless they are not adequately motivated[20]. Considerable differences have been

Based on the current study, no noticeable differences in the oral health attitudes of clinical students compared to that of pre-clinical students. Such results were previously reported in another study by Halawani et al.[18] among clinical and pre-clinical students in some Asian countries (India, Saudi Arabia, United Arab Emirates, and Yemen). Furthermore, other studies on Finnish and Indian students[22], Egyptian students[23], and among students in Michigan[24] reported no significant improvement in the practices of oral hygiene in students, even though they received dentistry-related information and tutoring[20]. However, these results do not agree with the results reported from other studies where an evident improvement of oral health practices and knowledge were found among Danish students[25], students at a teaching institute in Saudi Arabia[26], and a study among students at the University of Paris[27].

Although some variations existed between genders about their tooth brushing practices, oral health behavior, and oral health attitudes, no statistically significant associations were found between these components of the dental health knowledge and practices with gender. Such gender equality among dental students concerning their oral health practices and attitudes was reported in some other studies[2,15,28,29]. However, gender differences were reported in some studies[7,30–32].

The majority of students reported brushing their teeth with no gender association. The most common tooth brushing frequency was twice daily, with a significant association with the level of professional education. This coincides with the reported results of other studies[18,28,29], and it has been explained as the role of professional education in overcoming such gender differences[33]. Professional dental education appears to provide both knowledge and motivation to modify, favorably, learning dental students' oral health attitudes and behaviors [34]. There was an increase in the percentage of clinical students brushing more than twice daily than pre-clinical students. Such results were previously reported by Barrieshi-Nusair et al. (2006)[35], which showed that the percentage of students claiming to brush their teeth twice daily or more often was four times higher amongst clinical students than amongst pre-clinical students, which indicate that the acquired knowledge about the 'preventive behaviors' by clinical students was translated into 'positive preventive behavior.

The majority of students reported using fluoridated toothpaste. Although not statistically significant, knowledge about the role of fluorides in the prevention of dental caries was better among females and clinical students. This result was similar to the findings in other studies by Khami et al. (2007)[36] and Sharda and Shetty (2008)[37].

Health-related behavior change would reduce unhealthy behaviors such as sugar in the diet and smoking and increase healthy behaviors such as flossing and dental visits for routine and periodical check-ups[7]. About half of the students reported using dental floss daily, and using dental floss was highly associated with the level of study as nearly two-third of the students in the clinical levels of the study reported using dental floss, which indicates the effect the 'knowledge factor' on health-related behavior other than some factors like gender or culture. Such findings were also reported by a study done over ten years among final year students suggesting that the curriculum had a positive effect on student flossing[34].

The tongue cleaning behavior was found among more than half of the students with association with gender or level of study (knowledge), which may indicate the effect of factors other than knowledge, like, attitudes, the influence of family members, beliefs on the oral health behavior [37]. About half of the students reported using mouthwashes, and one-fourth of the students reported using Miswak. These oral hygiene aids may be the subject of attitudes, beliefs, religion, or cultural norms. Furthermore, a study showed the decline in mouth rinse use might be attributed to the possible change in the level of the education at the dental curriculum concerning the value and efficacy of mouth rinsing for a low-caries risk population (i.e., dental students)[34]. Chewing sticks have been used as oral hygiene tools for centuries in the Middle East and North Africa, and the most common type still used today is the Miswak chewing stick was; its use is perceived as both traditional practice and religious ritual[38] and the use of such sticks among professionals "dentists or dental students" may be the effect of tradition or religious norms other than the level of knowledge.

About half of the students reported their oral health status as "Good". It could have been predicted that dental care and satisfaction among dental students would be convincingly high because of the social prestige bias of dental professionals[18]. This type of psychology where self-report may be an imperfect recording of behavior biased by social belief is evident in our study and other studies. The majority of students assigned a good value for their dental health status[18].

The majority of the dental students, particularly the clinical students, reported going to the dentist when they had pain, and this is in agreement with the results of previous studies[18,28] where more than half of the dental students reported that they do not visit a dentist until they had a toothache. Since most of the students reported

to have a good value of their dental health, it may partly explain why most of them visited a dentist only when they felt a real need and not for regular examinations[18], and this is similar to the findings of the study done by Al-Hussaini et al.[39] and Halawany et al.[18]. On the other hand, a highly significant association was found between routine dental visits and the level of the study as only about one-third of the clinical students reported visiting a dentist only if having pain versus about two-third of the pre-clinical level of students. Furthermore, the majority of the students reported that patients should have a dental visit every six months. These findings clearly show the effect of acquired knowledge changed on oral health attitude. Such improvements may be due to the increasing experience of the students about oral health care by being in contact with patients in a clinical environment[19]. Although dental check-ups every 6 months are commonly recommended in many countries, there are no scientific facts to justify this high frequency of dental visits, which can lead to needless dental treatment[18]. Consequently, an individually determined recall interval based on consideration of caries risk is becoming more practical[39].

The main improvement in dental health attitudes and behaviors in dental students has been attributed to their incentive toward a dental career[40]. Dental educators should take the responsibility to increase the undergraduate students' awareness and knowledge of dental preventive measures, including oral self-care regimens. This professional development should create stable health behaviors that can overcome personal characteristics[3,7].

Conclusions

Based on the results of this study, noticeable differences in the oral health behaviors and attitudes of the surveyed students regarding gender or level of study could not be concluded on a statistical basis. Nevertheless, dental students generally showed adequate oral health knowledge and behavior. There were areas of oral health behaviors, attitudes (tooth brushing frequency, use of dental floss, and dental clinic visits) where increased knowledge showed improved dental students.

Dental students should have the necessary skills and knowledge in achieving good to excellent oral hygiene to have a positive effect on their patients and friends, and family members in the future. Thence, it is recommended that preventive programs, including self-care regimes, be started from the first year of dental education at the College of Dentistry.

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