

Changes in oral health attitude and behavior of undergraduate Iraqi dental students

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ABSTRACT— The present study was aimed to evaluate the changes in the oral and dental health attitudes and behaviors of the dental students in the city of Baghdad/ Iraq during their dental study courses. A self-assessment 16-item survey questionnaire was distributed among 659 students at different dental study stages. The samples were taken from the Dental Faculty, Al-Rafidain University College, Baghdad. Totally 396 pre-clinical (1st, 2nd and 3rd stages of dental collage) and 263 clinical students (4th and 5th stages of dental collage) with a mean age of 18-24 participant in this study. The questionnaire formula involved 3 demographic questions and 13 questions on the dental attitudes and behaviors of the students. The statistical analysis in this study was based on Chi-square and logistic regression models. The average score of the 4th and 5th stage students was higher than that of the 1st, 2nd and 3rd stage students remarkably. Statistically remarkable differences were present between the (1st, 2nd and 3rd stages) and the (4th and 5th stages) dental students for using dental floss and mouthwash regularly, presence of untreated carious teeth, smoking habit, deciding the treatment they need, gum bleeding on brushing, seeking dental visits and dental health rating. The results of this study showed the relatively improved oral and dental health attitudes of Iraqi dental students throughout their study years. This study confirmed that the overall oral health attitudes and behavior of Iraqi dental students was good and improved with rising level of education. However, there were deficits in few areas which require extra concerning and more properly established oral and dental health educational programs to rise the students' behavior towards oral health.

KEYWORDS: dental students, oral health, dental health, preventive dentistry.

1. INTRODUCTION

Dental students are considered as the future suppliers of dental care. Therefore, they should be a good idol for the members of their families, friends and patients. Self-care habits and behaviors of dental students towards their own oral health have direct influence on their patient's oral health improvement [1- 3], in addition, it shapes the public's oral health education knowledge [4]. In the same context, [5] requested to include comprehensive programs in preventive care for undergraduate dental students in order to empower them to encourage patients toward oral self-care and increase their knowledge. Such efforts should enable the future dentists improve the good health behaviors [6] which are not affected by individual properties [7], [10].

It is logical for dental students to improve their attitude towards their own oral health [8]. Oral health attitudes and behaviors are improved at the clinical years of training in comparison with the pre-clinical years, as displayed by researches [4], [9], [10], also it differs between cultures and countries [11]. Few

studies are recognized discussing the Iraqi dental students' oral health attitudes, in relation with the educational training effect on the improvement of their oral self-care attitudes. For that reason, this study aimed to assess self-reported dental and oral health behavior in Iraqi dental students, to detect the effect of educational courses on their health behaviors.

There is no universally accepted or recommended inventory or index to assess dental students' attitude and behavior. All data in literature that have been reported were derived from a series of individualized questionnaires. There is a global orientation to standardize dental education and to include health advancement in dentistry. In order to evaluate the progress of this orientation, comparative studies are significant to assess dental students' oral health attitudes in different cultures and under different educational systems [12].

The present study focused on the self-reported oral health behaviors of dental students in Iraq through their study time along with the level to which the knowledge gained towards their own oral health.

2. Materials and Methods

In the present study, a self-evaluating questionnaire was done as a survey method. A google-form questionnaire written in English was distributed among all five academic years dental students in Al-Rafidain University College, Baghdad at the middle of the academic year 2019–2020. The questionnaires were filled out namelessly and voluntarily; thus, there were no ethical obstacles. Students who agreed to conduct the survey were given the formula that should be filled out and returned at once immediately. Ethical committee agreement to conduct the survey was obtained from the Head of the institution with no subjective data from the participants was taken.

The number of effective (valid) cases for data analysis was 659 (99.6%). The effective (valid) cases were the cases who fully answered the questionnaire, and the study neglected the incomplete questionnaires. The age range of the respondents were 18-24 years.

The questionnaire included 16 multiple-choice questions designed to assess the oral health behavior of the students (3 demographic questions and 13 attitude and behavioral questions) was dispensed among 659 dental students from all five dental collage stages. Out of 659 dental students, 396 (60%) were preclinical (119 students from the 1st year, 123 students from the 2nd year and 154 students from the 3rd year) and 263 (40%) were clinical (164 students from the 4th year and 99 students from the 5th year). The students' distribution by educational stage is shown in Table 1.

The questionnaire included 3 demographic questions: (age, sex and stage of study), 5 behavioral questions: brushing frequency (1> time / day, one time / day, two times / day, 2< times / day); type of toothbrush (hard, medium, soft); flossing regularly (yes/no); using mouthwash regularly (yes/no); are you a smoker? (yes/no); 8 Oral health attitudes questions: Do you have untreated carious teeth (yes/no); Can you decide the treatment you need (yes/no); do you worry about your teeth color (yes/no); are you satisfied with the appearance of your teeth (yes/no); does your gum bleed when you brush your teeth (yes/no); when do you visit the dentist (regularly each 6-12 months, when I have a problem with my teeth, when I have pain, I have never visited a dentist); Are you considering a regular dental check-up must be done: each 6 months, once a year or at least when necessary; How much you are rating your dental health? (Very good, good, fair, bad, I don't know).

Table 1: Distribution of dental students participating in the study, by number and percentage of participants in each class

Class year	number	(%) of class
1st year	119	18.1
2nd year	123	18.7
3rd year	154	23.4
4th year	146	22.2
5th year	99	15.0

3. Results

The Statistical Package for the Social Sciences (SPSS) version 11.0 (SPSS Inc., Chicago, IL, USA) was done for statistical data analysis in the study. The data was analyzed for frequency distribution. The chi-squared test was done to compare between pre-clinical and clinical dental students to assess significant differences for responses. A P-value of <0.05 was considered to be statistically important. Students' responses are shown in Table 2.

Significant differences between (4th and 5th stages) and (1st, 2nd and 3rd grades) dental students were found for 8 of 13 questions reflecting the development in oral health behavior in (4th and 5th stages) dental students in comparison with (1st, 2nd and 3rd grades) students.

Table 2: The items of the questionnaire and the responses percentage by level of dental student's education

Distribution of responses (n, %)							
	Question number	Pre-clinical	%	Clinical	%	X2	p-value
		396		263			
1	How often do you brush your teeth every day?						
	1> time / day	22	5.6	10	3.8	3.986	0.263
	One time / day	146	36.9	86	32.7		
	Two times / day	187	47.2	144	54.8		
	2< times / day	41	10.4	23	8.7		
2	What type of toothbrush do you use?						
	Soft	104	26.3	89	33.8	5.408	0.067
	Medium	277	69.9	161	61.2		
	Hard	15	3.8	13	4.9		
3	Do you use a dental floss regularly?						
	Yes	146	36.9	122	46.4	5.935	0.015
	No	250	63.1	141	53.6		

4	Do you use mouthwash regularly?						
	Yes	163	41.2	77	29.3	9.639	0.002
	No	233	58.8	186	70.7		
5	Do you have untreated carious teeth?						
	Yes	145	36.6	153	58.2	55.554	0.000
	No	146	36.9	96	36.5		
	I don't Know	105	26.5	14	5.3		
6	Can you decide the treatment you need?						
	Yes	224	56.6	223	84.8	57.699	0.000
	No	172	43.4	40	15.2		
7	Do you smoke?						
	Yes	49	12.4	52	19.8	6.665	0.009
	No	347	87.6	211	80.2		
8	Do you worry about the color of your teeth?						
	Yes	262	66.2	175	66.5	0.01	0.920
	No	134	33.8	88	33.5		
9	Are you satisfied with appearance of your teeth?						
	Yes	239	60.4	173	65.8	1.986	0.159
	No	157	39.6	90	34.2		
10	Does your gum bleed when you brush your teeth?						
	yes	104	26.3	37	14.1	13.973	0.000
	No	292	73.7	226	85.9		
11	When do you visit the dentist?						
	Every 6-12 months	45	11.4	42	16	12.264	0.007
	When I have a problem with my teeth	184	46.5	144	54.8		
	When I have pain	116	29.3	50	19		
	I have never visited a dentist	51	12.9	27	10.3		
12	Are you considering a regular dental check-up must be:						
	Each 6 months	228	57.6	173	65.8	4.648	0.098
	Once a year	57	14.4	33	12.5		
	When necessary	111	28	57	21.7		
13	How much you are rating your dental health?						
	Very good	39	9.8	22	8.4	24.397	0.000
	Good	218	55.1	167	63.5		
	Fair	63	15.9	56	21.3		
	Bad	13	3.3	7	2.7		
	I don't Know	63	15.9	11	4.2		

In total, (60.6%) of all participants were female and (39.4%) were male. The distribution of students according to their educational level of study was (18.1%) of the students were in the 1st year, (18.6%) were in the 2nd year, (23.2%) were in the 3rd year, (24.7%) were in the 4th year and (14.9%) were in the final year.

Different responses were chosen for the type of toothbrush used ($p > 0.05$). The results of our study showed that about (70%) of pre-clinical students and (61%) of clinical students reported using a medium type toothbrush. In addition, a majority of respondents (50.2%) mentioned that they brush their teeth twice a day (47.2% of the pre-clinical and 54.8% of clinical students). Furthermore, statistically significant difference was found in regards to gum bleeding on brushing between students at the pre-clinical years and students at the clinical years of their dental study ($P < 0.001$). A high percentage of students (78.7%) reported no tendency to gum bleeding on brushing, (73.7%) in the pre-clinical students compared to (85.9%) in clinical students.

A significant difference was found between students of (first grade, second grade and third grade) and those of (fourth grade and fifth grade) (P value=0.007) regarding dental visits. Only (11.4%) of pre-clinical dental students and (16%) of clinical dental students are visiting the dentist every 6-12 months (Figure 1).

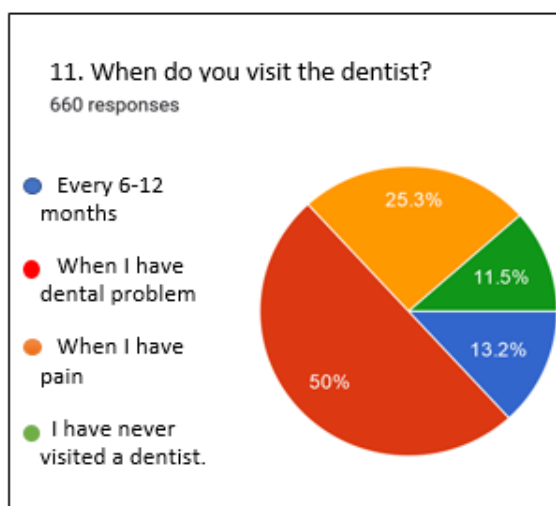


Figure 1: students' responses to the question regarding dental visits.

Usage of dental floss was in significant different between pre-clinical students and clinical students ($P < 0.05$). Majority of respondent (59.4%) mentioned that they are not using a dental floss regularly. Only 36.9% of the pre-clinical students and (46.4%) of the clinical students reported using a dental floss regularly. Likewise, majority of respondents (64.1%) reported not using a mouthwash regularly. Use of mouthwash was statistically significant between students of (first grade, second grade and third grade) and those of (fourth grade and fifth grade) (P value= 0.002).

According to results, there was statistically high difference between pre-clinical and clinical dental students (P value =0.009) in smoking habits. Majority of respondents were non-smokers (85.1%). Only (12.4%) of the pre-clinical students and (19.8%) of clinical dental students were smokers. In addition, smoking habit was highly significant in males compared to females. Approximately (91.8%) of all smokers were males, while (8.2%) of all smokers were females. Also, about (66.5%) of clinical students worried about their teeth color compared to (66.2%) for the pre-clinical student, with no significant difference (p value=0.920).

About (58.5%) in all dental students rated their dental health as "good" and (50%) mentioned "visiting dentists only when they had a dental problem". About (61.1%) mentioned "every 6 months" in response to

the question about a regular dental check-up, (13.6%) mentioned “once a year” and (25.3%) mentioned “only when necessary”.

A higher percentage of pre-clinical students (26.5%) didn’t know if they have untreated carious teeth compared to clinical students (5.3%) (Figure 2).

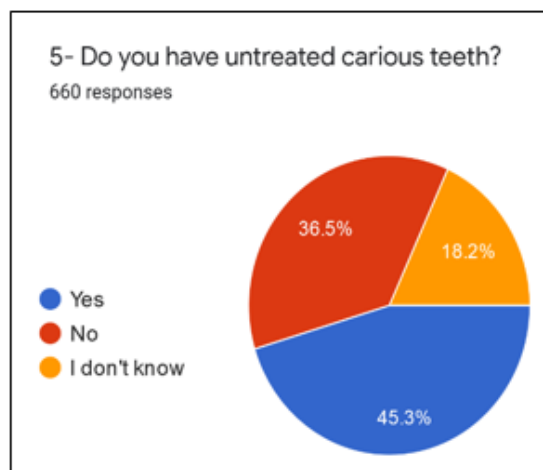


Figure 2: Responses to the question regarding presence of untreated carious teeth.

Furthermore, (56.6%) of pre-clinical student think they can decide the treatment they need compared to (84.8%) in clinical students. In total, (63%) of dental students are satisfied with the appearance of their teeth, with no significant difference between the two groups.

4. Discussion

Lots of previous studies in literature discussed the knowledge of dental students in preventive dentistry [5], [13- 16] as well as studies on oral hygiene behaviors [9], [17- 20]. These studies revealed differences in oral health behaviors amongst future dentists in different countries. The presence of these differences in oral health behavior is evidence of the significant role of socio- factors in oral health attitudes and behaviors [21]. In addition, the impact of different dental curricula on these differences have been emphasized [9]. New studies certain that the advancement through the dental curriculum, and the eventual increase in education, is accompanied with developed oral health behaviors among dental students in clinical stages [22]. The dentistry college curriculum in Iraq comprises five years, divided into two parts: the 1st, 2nd and 3rd grades or what is called (pre-clinical stages) and the 4th and 5th grades or (clinical stages) Pre-clinical students study basic science courses and pre-clinical laboratory courses. During the clinical stages, the students will be under supervision in their dealing with patients. The Iraqi dental curriculum, which is implemented in all dental colleges in Iraq, there is a course of preventive dentistry provided in the 3rd year; in addition to that, some related subjects are taught as parts of courses in pedodontics, periodontics and operative dentistry during the clinical years. As there are few previous studies on the oral health behavior and attitude of Iraqi dental students, the results of the present study provide valuable data of prevention-orientated dental education in Iraq.

There are statistically important differences between (1st, 2nd and 3rd) levels and (4th and 5th) levels students in questions 3-7, 10, 11, 13 (Figure 3). The oral health level of self-care and knowledge has also been in

association with a positive understanding of dental profession [23]. The students made an advancement in the practices of oral hygiene, behavior and have important changes in the oral self-care. Studying clinical courses has enabled dental students in their last stages to get a remarkably better oral health attitude and oral self-care practice. The continuous development in knowledge and dental experience are the contributing factors to this improvement in attitudes and behaviors. Students in clinical stages have more chances to understand many dental topics, giving oral hygiene instructions to their patients, and discussing with colleagues that might contribute to this rise in oral health practice and attitudes [24], [35- 51].

1. Age: _____

2. Gender: Male ☐ Female ☐

3. Year of study: 1st year ☐ 2nd year ☐ 3rd year ☐ 4th year ☐ 5th year ☐

4. How often do you brush your teeth?
1> time ☐ once daily ☐ twice daily ☐ > 2 times ☐

5. What type of toothbrush do you use?
Soft ☐ Medium ☐ Hard ☐

6. Do you use dental floss regularly? Yes ☐ No ☐

7. Do you use mouthwash regularly? Yes ☐ No ☐

8. Do you have untreated carious teeth? Yes ☐ No ☐

9. Can you decide the treatment you need? Yes ☐ No ☐

10. Do you smoke? Yes ☐ No ☐

11. Do you worry about the color of your teeth? Yes ☐ No ☐

12. Are you satisfied with the appearance of your teeth? Yes ☐ No ☐

13. Does your gum bleed when you brush your teeth? Yes ☐ No ☐

14. When do you visit your dentist?
Regularly each 6-12 months ☐ when I have a problem with my teeth ☐
when I have pain ☐ I have never visited a dentist ☐

15. Are you considering a regular dental check-up must be:
Each 6 months ☐ One time/ year ☐ if necessary ☐

16. How much you are rating your dental health?
Very good ☐ Good ☐ Fair ☐ Bad ☐ I don't know ☐

Figure 3: Questioner form

There are lots of studies that considered tooth-brushing twice a day is the recommended frequency to maximize the fluoride effect in toothpaste [25], [26]. In our study, the reported frequency of brushing twice a day was (50.2%) among all students (Figure 4). No significant change was seen between pre-clinical and

clinical students regarding teeth brushing frequency (P value=0.263). More than half of the clinical students (54.8%) and only (47.2%) of the pre-clinical students reported brushing twice a day. Higher results were reported by final year dental students in Iran (93%) [1], Mongolia (97%) [13], and lower percentage in Spain (21.3%) [4]. In addition, higher percentage was described by dental students of Saudi Arabia at all study stages (81%) [19]. However, it seems that there is a lack of compatibility between the international recommendations and our respondents' results about teeth-brushing frequency. A possible cause for this discrepancy could be caused by insufficient emphasis on maintaining the recommended levels of oral self-care in the undergraduate curriculum.

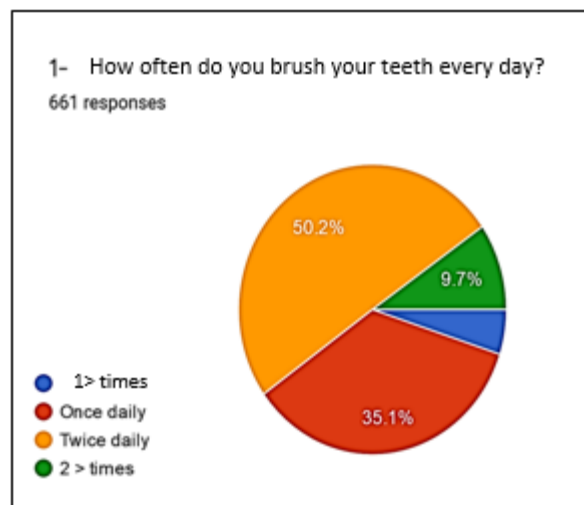


Figure 4: Students responses to the question regarding teeth brushing frequency.

Self-reported untreated carious lesions were prevalent among (36.6%) of 1st, 2nd and 3rd grades students and (58.2%) of 4th and 5th stages students. The difference is significant between the two groups (P value = 0.000). This increase could be attributed to the increased knowledge about caries diagnosis and the self-diagnosis between peers in clinics.

As reported in the study, the oral hygiene customs of dental students were very hopeful. A larger percentage of students reported using a dental floss and mouthwash regularly (59.4% and 64.1% respectively). A remarkable improvement was shown in the number of clinical students using flossing (46.4%) when compared to pre-clinical students (36.9%). Similar increase was reported in Turkey (32% in pre-clinical and 49% in clinical students) [27]. This could be attributed to the fact that students become more concerned about their teeth and aware of the aesthetic of their dentition as they progress in educational level [28].

The prevalence of gum bleeding was (21.3%) among all the participants. Gum bleeding was more common in pre-clinical students (26.3%) compared to clinical students (14.1%). This could be attributed to the students' awareness about how to prevent the periodontal disease because of the improvement in their clinical experience. This result was in accordance with previous results in Egypt (29.8%) [29] and India (23.4%) [28]. In contrast, the percentage was higher in Iran (44.5%) [30] and Turkey (81.1%) [12], and lower in Croatia (10.1%) [22], which could be due to cultural differences and curriculum dissimilarities.

In the present study, a total of (14.9%) of all students were smokers. Similar result was reported in a previous study in Iraq (14.1%) [11]. Population smoking habits ranged from (12.4%-19.8%) among pre-clinical and clinical students respectively. Similar results were found among dental students in Turkey (11% in pre-clinical and 18% in clinical students) [27]. A higher smoking rate was found among dental students Bangladesh (22%), Holland (24%), Greece (47%) and France (33%) [2], [31], [32]. However, the prevalence of smoking among dental students from 19 countries was less than that of the population (according to a review on smoking) [32]. Dental students should represent a good example of maintaining good health, therefore, the (14.9%) smokers reported in dental students is considered to be high. There should be more regular effort to motivate students to stop smoking soon.

The results estimated that about (66.7%) of the dental students were caring about their teeth color in comparison with other recent study among dental students in Iraq (91.4%) [11], India (84%) and Jordan (67%) [33]. It was interesting to note that about half of students (50%) postpone visiting the dentist till they get pain or toothache. This is in accordance with results reported in Egypt (56.1%) [29], Japan (56%) [14], Sudan (65.5%) [34], and India (50.7%) [28]. A possible causes for this could be due to previous bad dental experiences, pain phobia, high cost of dental services and the time required for frequent visits [28].

5. Conclusion

The results of this study showed that the oral health and behavior of dental students increased with the increasing in the level of education and clinical experience. However, some issues such as: teeth brushing frequency, regular dental visits and smoking secession should have more concern in the related college lessons.

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