

# Knowledge, Attitudes and Practices Related to Oral Health of Dental, Medical and Pharmacy Students at the University of Science and Technology in Yemen

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## Abstract

**Objective:** This study aimed to evaluate the level of knowledge, attitudes and practices related to oral health of Dental, Medical and Pharmacy students at University of Science and Technology in Yemen.

**Subjects and Methods:** A cross-sectional study with questionnaire survey was conducted on 300 students with an age ranged from 19 to 22 years. They were distributed equally and randomly according to gender, specialty and year of the studied academic programs. The target population was the 2nd and 3rd year's pre-professional students. The obtained data were subjected to statistical analysis.

**Results:** The highest rate of knowledge scores of the students related to oral health was (87%) with better response in Dental students (95%) than Medical and Pharmacy students (84% and 82% respectively). However, the lowest rate of them was (54.33%) with also better response in Dental students (64%) than Medical and Pharmacy students (52% and 47% respectively). Nearly 72% of them (93% Dental, 65% Medical and 58% Pharmacy) believed that regular visits to the dentist is necessary. Moreover, 56.33% of them (88% Dental, 43% Medical and 38% Pharmacy) showed that private clinic was voted as the preferred place of visit for dental treatment. Approximately 77% of them (86% Dental, 74% Medical and 71% Pharmacy) had visited a dentist at least once in their lifetime. About 61.67% of them (77% Dental, 56% Medical and 52% Pharmacy) brushed their teeth twice daily.

**Conclusion:** It showed that knowledge, attitudes and practices related to oral health of female students were better than male students. Dental students had better knowledge, attitudes and practices related to oral health than medical and pharmacy students.

**Keywords:** Knowledge attitudes; Practices; Oral health; Dental, Medical Pharmacy Students

## Introduction

Oral health is considered an integral part of an individual's overall health [1]. It is the mirror of general health [2]. It is just not limited to the teeth being healthy, but means a comprehensive protection of all structures in the oral cavity [3]. Good oral health not only promotes an individual to look and feel good, it also helps in preserving oral functions [4,5]. A good knowledge about oral health is necessary to pursue health oral practices [6,7]. Previous studies have shown that the main references for oral health knowledge are mass media, dental professionals and dental literature as well as there is a direct relation and association between increased knowledge of oral hygiene and better oral health [8-11].

Recent studies about oral health knowledge, attitudes and practices have been conducted among university students. In 2014, Peltzer and Pengpid investigated oral health behavior and associated factors

among undergraduate university students from various disciplines (education, humanities and arts, social sciences, business and law, science, engineering, manufacturing and construction, agriculture, health and welfare and services) in low, middle and high income countries [12]. However, in Ethiopia, Darout studied knowledge and behavior related to oral health among Jimma university health sciences students including environmental health, nursing, health education and junior batches (the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years) of dental school [13]. Another study in Jordan, investigated oral health knowledge and practices among undergraduate university students from various disciplines (medicine, nursing, pharmacy, engineering, computer science, religion, economy, science, literature and education) with access to free dental care [14].

In 2016, Mulla and Omar evaluated oral health knowledge, attitude and practices among medical students of Taibah University

in Al-Madinah, Saudi Arabia [2]. However, in Nigeria Bashiru and Omotola studied and compared the oral health knowledge, attitude and the behavior of medical, pharmacy and nursing students at the University of Port Harcourt [15]. In 2017, Kumar, et al. studied and compared the oral health knowledge, attitude and practices among dental and medical students of KIIT university in Eastern India [16]. However, in Saudi Arabia, Jaber, et al. assessed oral health knowledge and practices among male students of Qassim University including art and science, economic and administration, public health and health information, and engineering [3]. Another study in Saudi Arabia, evaluated the level of knowledge, attitudes and practices related to oral health of the second-year pre-professional students at Kin Saud bin Abdulaziz university for health sciences including nursing, pharmacy, medicine, oral and dental health, applied medical sciences and health information system [17].

Because today's students will provide health services in the future and will be responsible for public oral health education, it is important to study their oral health knowledge, attitudes and practices [16]. Therefore, the present study aimed to evaluate the level of knowledge, attitudes and practices related to oral health of Dental, Medical and Pharmacy students at University of Science and Technology in Yemen.

## Subjects and Methods

A cross-sectional study with questionnaire survey was conducted on 300 students with an age ranged from 19 to 22 years. They were distributed equally and randomly according to gender, specialty and year of the academic program of Dental, Medical and Pharmacy students at University of Science and Technology, Sana'a, Yemen. The target population was the 2<sup>nd</sup> and 3<sup>rd</sup> year's pre-professional students.

A self-administered structured questionnaire was adopted and modified from a recent study performed by Kumer, et al. (2017) [16]. Through the period from March to May 2017, the questionnaires were distributed by an assistant group of dental students in the final level of Bachelor in Dental Surgery, College of Dentistry, University of Science and Technology, under the supervision of the researchers. The assistant group helped the researchers in giving instructions to the students of the study sample regarding the questionnaire. The students were requested to remain in the classroom after the lecture hours to fill in the questionnaires and all completed questionnaires were retrieved immediately after completion.

The questionnaire consisted of 27 questions and was organized into four parts. The first part included demographic data of university students such as age, gender, specialty and year of the academic program. The second part included 18 questions and evaluated the student's oral health knowledge. The third part included 5 questions and evaluated the student's attitude towards the dentist and dental treatment. The fourth and last part included 4 questions and evaluated the student's practice in relation to oral health. The students were asked to respond to each question according to the response provided in the questionnaire. Respond included multiple-choice questions in which the students were instructed to choose only one appropriate response from a provided list of options. One hundred from dental students, one hundred from medical students, and one hundred from pharmacy students were completely filled questionnaires that were subjected to statistical analysis.

Data were analyzed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 20 for windows. For the questions included in the knowledge, attitudes and practices parts of the questionnaire, each correct answer scored 'one', and wrong and do not know answers were scored 'zero'. The individual scores were summed

up to yield a total score. Mean percentage scores, standard deviation ( $\pm$  SD), and frequency distribution were calculated for knowledge, attitudes and practices related to oral health.

## Results

Distribution of the students according to demographic data is summarized in table 1, which shows that the study population was conducted on 300 students (Mean age=20.59 with SD=  $\pm$  1.62) included 100 Dental students (Mean age =20.32 with SD=  $\pm$  1.61), 100 Medical students (Mean age=20.84 with SD=  $\pm$  1.68) and 100 Pharmacy students (Mean age= 20.61 with SD=  $\pm$  1.58). It consisted of 50% (n=150) male students, and 50% (n=150) female students at the 2<sup>nd</sup> and 3<sup>rd</sup> years of the studied academic programs. The number of students who their age ranged from 19-20 years was 138 students (46.0%). However, the number of students who their age ranged from 21-22 years was 162 (54.0%).

Knowledge scores of the students related to oral health are summarized in table 2, which shows the following results: The highest rate of knowledge scores of the students related to oral health was (87%) and observed in response to the question "Purpose of tooth brushing" with better response in Dental students (95%) than Medical and Pharmacy students (84% and 82% respectively). However, the lowest rate of them was (54.33%) and observed in response to the question "Chronic trauma and oral cancer" with also better response in Dental students (64%) than Medical and Pharmacy students (52% and 47% respectively). Approximately 85.67% of them (93% Dental, 85% Medical and 79% Pharmacy) knew that oral health is essential to general health. Eighty six percent of them were aware that a soft toothbrush is more preferable than hard toothbrush with better response in Dental students (91%) than Medical and Pharmacy students (82% and 85% respectively).

In between 70% and 79% of the respondents knew about tooth brushing with fluoridated toothpaste twice daily prevents dental caries, the interval for changing toothbrush, dental flossing, dental caries and gingivitis to be the most common dental diseases, improper tooth brushing as the cause of dental caries, role of sugary foods in dental caries, presence of cavity indicates dental caries, cause of bad breath, qat chewing increases the chance for oral cancer, and smoking can cause oral cancer. These responded questions of the students were reported as (78.33%, 73.67%, 73.67%, 73.33%, 71.67%, 73.67%, 75.33%, 78.33%, 74.67% and 75.67% respectively) with better response in Dental students than Medical and Pharmacy students.

In between 61% and 65% of the respondents knew about how often should they floss their teeth, gingival bleeding, methods to prevent gingival bleeding and effect of soft drinks on teeth as dental caries. These responded questions of the students were reported as (63.67%, 64.33%, 62.33% and 64.33% respectively) with better response in Dental students than Medical and Pharmacy students.

Attitudes of the students towards oral care are summarized in table 3, which shows the following results: Nearly 72% of the students (93% Dental, 65% Medical and 58% Pharmacy) believed that regular visits to the dentist are necessary. In contrast, about 48% of them (54% Dental, 46% Medical and 44% Pharmacy) were slightly nervous regarding dental treatment. Fifty one percent of Medical students felt that the dentists give more importance to treatment rather than prevention in contrast to dental and pharmacy students (33% and 44% respectively).

About 73.33% of them (85% Dental, 74% Medical and 61% Pharmacy) reported that they did not avoid a dental visit due to cost

**Table 1:** Distribution of the students according to demographic data.

Variable	Dental Students		Medical Students		Pharmacy Students		Grand Total	
	n	%	n	%	n	%	n	%
<b>Gender</b>								
Male	50	50	50	50	50	50	150	50
Female	50	50	50	50	50	50	150	50
<b>Age by years</b>								
19-20	45	45	47	47	46	46	138	46
21-22	55	55	53	53	54	54	162	54
Mean age	20.32		20.84		20.61		20.59	
± SD age	1.61		1.68		1.58		1.62	
<b>Year of the academic program</b>								
2 <sup>nd</sup> level	50	50	50		50	50	150	50
3 <sup>rd</sup> level	50	50	50	50	50	50	150	50
Total	100	100	100	100	100	100	300	100

**Table 2:** Knowledge scores of the students related to oral health (n=300).

Question	Dental Students		Medical Students		Pharmacy Students		Grand Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Oral health and general health	93	93	85	85	79	79	257	85.67
Purpose of tooth brushing	95	95	84	84	82	82	261	87
Which is better? Hard or soft toothbrush	91	91	82	82	85	85	258	86
Dental caries can be prevented by brushing with fluoridated toothpaste twice daily	85	85	72	72	78	78	235	78.33
Interval for change of toothbrush	82	82	68	68	71	71	221	73.67
Knowledge regarding dental flossing	86	86	62	62	73	73	221	73.67
How often should we floss our teeth?	72	72	54	54	65	65	191	63.67
Two most common dental diseases	86	86	74	74	60	60	220	73.33
Reason for dental caries	84	84	70	70	61	61	215	71.67
Role of sugary foods in dental caries	83	83	73	73	65	65	221	73.67
Presence of cavity indicates dental caries	80	80	76	76	70	70	226	75.33
Knowledge about gingival bleeding	76	76	61	61	56	56	193	64.33
Methods to prevent gingival bleeding	73	73	56	56	58	58	187	62.33
Effect of soft drinks on teeth	75	75	63	63	55	55	193	64.33
Cause of bad breath	85	85	78	78	72	72	235	78.33
Chronic trauma and oral cancer	64	64	52	52	47	47	163	54.33
Qat chewing and oral cancer	78	78	74	74	72	72	224	74.67
Smoking and oral cancer	83	83	76	76	68	68	227	75.67

factor. Moreover, 56.33% of them (88% Dental, 43% Medical and 38% Pharmacy) showed that private clinic was voted as the preferred place of visit for dental treatment.

Oral care practices of the students are summarized in table 4, which shows the following results: Approximately 77% of the students (86% Dental, 74% Medical and 71% Pharmacy) had visited a dentist at least once in their lifetime. Almost 87.33% of them (96% Dental, 84% Medical and 82% Pharmacy) brushed their teeth by toothbrush and toothpaste.

About 61.67% of them (77% Dental, 56% Medical and 52% Pharmacy) brushed their teeth twice daily. Seventy three percent of them (71% Dental, 73% Medical and 75% Pharmacy) did not use any other oral hygiene methods in addition to tooth brushing.

The mean percentage scores and standard deviation ( $\pm$  SD) for knowledge, attitudes and practices of the students according to gender and specialty are summarized in table 5, which shows the following results: Female students in the studied academic programs had

**Table 3:** Attitudes of the students towards oral care (n=300).

Attitude	Dental Students		Medical Students		Pharmacy Students		Grand Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
<b>Is regular visit to the dentist necessary?</b>								
Yes	93	93	65	65	58	58	216	72
No	4	4	22	22	31	31	57	19
Don't know	3	3	13	13	11	11	27	9
<b>Does dental treatment make you nervous?</b>								
No	40	40	38	38	35	35	113	37.67
Slightly	54	54	46	46	44	44	144	48
Extremely	6	6	16	16	21	21	43	14.33
<b>Do you think the dentists give importance to treatment than prevention?</b>								
Yes	33	33	51	51	44	44	128	42.67
No	62	62	34	34	38	38	134	44.67
Don't know	5	5	15	15	18	18	38	12.66
<b>Have you ever avoided a dental visit due to cost factor?</b>								
Yes	15	15	26	26	39	39	80	26.67
No	85	85	74	74	61	61	220	73.33
<b>If you plan a dental visit, your preference would be?</b>								
Dental Hospital	12	12	57	57	62	62	131	43.67
Private Clinic	88	88	43	43	38	38	169	56.33
Total	100	100	100	100	100	100	300	100

**Table 4:** Oral care practices of the students (n=300).

Practice	Dental Students		Medical Students		Pharmacy Students		Grand Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
<b>Have you ever visited a dentist?</b>								
Yes	86	86	74	74	71	71	231	77
No	14	14	26	26	29	29	69	23
<b>Do you brush your teeth by toothbrush and toothpaste?</b>								
Yes	96	96	84	84	82	82	262	87.3
No	4	4	16	16	18	18	38	12.7
<b>How many times in a day you brush your teeth?</b>								
Never	4	4	16	16	18	18	38	12.7
Once	10	10	21	21	25	25	56	18.7
Twice	77	77	56	56	52	52	185	61.7
Thrice	9	9	7	7	5	5	21	7
<b>Do you use any of these oral hygiene methods in addition to tooth brushing?</b>								
Mouthwash	16	16	18	18	13	13	47	15.7
Dental floss	5	5	2	2	3	3	10	3.33
Toothpick	8	8	7	7	9	9	24	8
None	71	71	73	73	75	75	219	73
Total	100	100	100	100	100	100	300	100

better knowledge, attitudes and practices related to oral health than male students. In addition to Dental students had better knowledge, attitudes and practices related to oral health than medical and pharmacy students.

## Discussion

In Yemen, data knowledge, attitudes and practices related to oral health of the university students is not available, henceforth the current study intended to provide such information with regards to the Dental, Medical and Pharmacy students at University of Science and Technology in Sana'a city, and to provide a comprehensive overview which can help the planning and evaluation of the oral health promotion program in this region.

The major concern of oral health educators is to impact a positive oral health knowledge and practice in the society. This knowledge is usually obtained from information which subsequently translates into an action. Practice is an outcome measure when an action is sustained. Attitudes toward oral health determine the condition of the oral cavity [15]. Health professionals play a pivotal role in providing knowledge regarding oral health and its significance among general public. The students of medical sciences should possess high level of awareness of self oral health care, so that this attitude can be instilled among patients and community at large [16].

In the present study, the scores of knowledge were significantly higher among dental students than medical and/or pharmacy students. This finding is in agreement with previous studies [2,14-20]. Eighty five percent of the dental students brushed twice daily compared to 72% of the medical students and 78% of pharmacy students. This finding is indicating to better oral hygiene measures adopted by dental students. Similar finding was reported by other studies [10,16,17,21-22]. But this in disagreement with a study by (Al Ansari, et al. 2003) who reported that 34% of health science students brushed twice daily and other study by (Benjamin, et al. 2016) who showed that 27.5% of the dental students and 39% of the medical students brushed twice daily [23,24].

A total of 78.33% of the students felt that dental caries can be prevented by tooth brushing with fluoridated toothpaste. This result is in agreement with previous studies [15-17,25-27]. A higher percentage (63.67%) of the students regarding how often they should floss their teeth. This finding is in disagreement with another study (Kumer, et al. 2017) who reported that 13.33% of the students flossed [16].

This shows that the students in the present study are well educated regarding the benefits of dental flossing. Only 73.67% of the students reported that there was a role of sugary foods in causing dental caries. This result is in disagreement with other studies (Al Ansari, et al. 2003; Kumer, et al. 2017) who found in their studies that it to be 93.8% and 79.33% respectively [16,23]. On the other hand, 64.33% of the study sample were much less aware of the effect of soft drinks on teeth as compared to another study by (Kumer, et al. 2017) [16]. This shows higher level of awareness compared to the students in the current study.

Most of the students (85.67%) considered oral health to be important in maintaining good general health, and this is compatible with the results of other studies [16,28,29]. This shows that the role of oral health to be a part of overall health. In this study, knowledge regarding smoking and/or qat chewing as the cause of oral cancer showed lower frequency compared to the results of other studies [16,27]. All items of attitudes towards oral care and oral care practices in this study showed results are in disagreement with results of recent studies [15-17]. These differences may be due to sample size, region of the study, and specialty of the studied academic programs.

The results of this study showed that female students to be better than male students in items of knowledge, attitudes and practices related to oral health. This finding is in accordance with a recent studies [15-17,30,31]. This has been attributed to the positive self care attitudes for internal psychological reasons to improve their appearance and self esteem [16,19]. Moreover, the present study showed that the dental students had better knowledge, attitudes and practices related to oral health than medical and pharmacy students. These findings in accordance with several studies indicated that oral health knowledge to be high among the dental students because it forms a significant part of their curriculum, and hence, positively influences their attitudes and practices [16,17,19,20,32]. Because good oral health is essential for good general health, medical and pharmacy programs should include oral health as an integral component of their curriculum.

## Conclusion

It may be concluded that knowledge, attitudes and practices related to oral health of female students were better than male students. Dental students had better knowledge, attitudes and practices related to oral health than medical and pharmacy students. Further emphasis on oral

**Table 5:** The mean percentage scores and standard deviation ( $\pm$  SD) for knowledge, attitudes and practices of the students according to gender and specialty.

Variable	Dental Students		Medical Students		Pharmacy Students		Grand Total	
	Mean	( $\pm$ SD)	Mean	( $\pm$ SD)	Mean	( $\pm$ SD)	Mean	( $\pm$ SD)
<b>Knowledge scores</b>								
Male	72.12	13.21	62.34	12.23	60.05	11.24	64.84	12.23
Female	77.42	11.32	64.43	10.27	62.13	10.12	67.99	10.57
<b>Attitude scores</b>								
Male	68.14	12.46	58.42	10.23	56.63	9.54	61.06	10.74
Female	70.35	11.26	60.56	9.44	58.48	8.43	63.13	9.71
<b>Practice scores</b>								
Male	61.67	11.14	53.71	9.56	51.16	8.93	55.51	9.88
Female	65.73	10.33	55.74	7.84	53.94	7.43	58.47	8.53

health is necessary in undergraduate training to improve knowledge, attitudes and practices related to oral health among the students who are the future guiders of dental, medical and pharmacy care will act as role models for oral health education and improvement among their patients and communities.

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