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Oral health Knowledge, Attitude and Practice Among dental Students in Public and Private Universities in Erbil City/Iraq

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Abstract

Oral health understanding, attitudes, and practices (KAP) among healthcare specialists like dentists affect their ability to encourage good oral health in patients. This analysis aimed to assess and compare oral health KAP between dental students at public and private universities in Erbil, Iraq. A cross-sectional survey of 882 undergraduate dental students from Haller Medical University (public) and Tishk International University (private) in Erbil was conducted using the 20-item HU-DBI questionnaire Used statistical tests were used to analyze scores according to gender, academic year and university type. The mean HU-DBI score was 7.06±1.71, indicating high oral health KAP. Women scored slightly higher than men. Hospital students showed significantly higher scores (7.39±1.68) than clinical students (6.76±1.69) ($p<0.001$). Students in public universities scored higher (7.18±1.71) than in private universities (6.95±1.71) ($p=0.045$). Dental students in Erbil showed good KAP in oral health, scoring better among hospital students and public universities. The results highlight the importance of dental education in improving oral health attitudes and behaviors.

Keywords: Oral health, Knowledge, Attitude, Practice, Dental students, Public university, Private university

1- Introduction

Oral health is an essentials component of individual's general health and overall well-being, which is related to individual's oral health knowledges healthy oral hygiene habits [(1)]. Therefore, healthcare professionals, including physicians, dentists, and pharmacy professionals, must collaborate to improve overall health [(2)]. It has been suggested by research that the oral health knowledge and behavior of dental students is not consistent across the clinical and preclinical years of dental education. Furthermore, the oral health attitudes and behavior of dental students can differ across various countries and cultures [(3, 4)]. Since professional (dental) students concentrate a strong emphasis on preventative knowledge and health advancement, it is essential for them to have enough oral health knowledge, attitude, and practice of their own. [(5-7)].

Attitude is defined as 'the way in which a person views and evaluates something or someone. Attitudes determine whether people like or dislike things and therefore how they behave towards them [(8)]. Oral diseases are a significant public health concern globally due to their high incidence and prevalence. Moreover, oral disease treatments are among the most costly medical treatments in most industrialized countries, ranking fourth in terms of expenses [(9)].

The influence of one's dental health is significant not just on an individual level but also on a communal one. The paper titled (Global Goals for Oral Health 2020) was drafted in 2003 by the Fédération Dentaire International World Dental Federation (FDI), the World Health Organization (WHO), and the International Association for Dental Research. The ideas that are stated in this paper attempt to set new objectives, targets, and goals for global oral health that are more specific and sophisticated than those that were previously established. This suggestion was made with the intention of supplying local and national healthcare planners with a framework that would allow them to define oral health targets and criteria that are both attainable and of high quality [(10, 11)].

The knowledge, attitudes, and habits about oral health of college students in a variety of countries have been the subject of research. In the year 2014, Peltzer and Pengpid conducted research on the oral health behaviors and associated determinants of undergraduate university students from a variety of academic disciplines in 26 countries with low, medium, and high incomes. According to the findings of the research, university students from a variety of various cultures in Africa, Asia, and the Americas did not clean their teeth very often and did not see the dentist very often [(12)]. A research study was conducted in Nigeria to investigate the oral health knowledge, attitudes, and behaviors of university students who were enrolled in medical, pharmacy, and nursing programs. The purpose of the research study was to better understand the state of oral health in Nigeria. According to the results of the research, the level of oral health knowledge, attitudes, and behaviors shown by the students was inadequate and needed improvement [(13)]. An investigation on the oral health knowledge, attitudes, and behaviors of dentistry and medical students at a university in Eastern India was carried out in 2017 by Kumar et al. The purpose of the investigation was to analyze and compare the factors. According to the

findings of the research, female students demonstrated superior oral health knowledge and habits when compared with male students [3].

There have been several research conducted in Arab nations to investigate the oral health knowledge, attitudes, and practices of students, especially those enrolled in educational institutions [14, 15].

There have also been studies that have focused on evaluating dentistry undergraduate students and contrasting them with students from other academic fields who are attending universities. In contrast to students who are not majoring in dentistry, dental students get instruction on topics related to oral health as part of their undergraduate education. As a consequence, the findings of this research were not surprising [16, 17]. Some research was done in the Kurdistan region of Iraq. They were founded to highlight the role of Media in changing oral health behaviors. This study focuses on the influences of messages that are given to people and also the most effective Media to enhance oral health promotion [18]. Another study was aimed to contribute information about the level of knowledge, and assess the attitude and the practices of undergraduate students in Sulaimani universities towards personal and oral hygiene [19, 20].

In addition, the majority of the earlier research did not concentrate their attention on gender variations in oral health knowledge, attitudes, and practices. The studies that did concentrate on gender disparities evaluated the dental students' knowledge and compared the students who were in various academic years of dental school. There is limited data regarding the attitude and behavior of dental students in Egypt. Hence, the purpose of this study is to assess the oral health knowledge, attitude, and behavior to answer our research question, which is the difference between oral health knowledge, attitude, and behavior among undergraduate dental students from all levels Because of this, the present investigation was carried out to assess the knowledge, attitudes, and behaviors on oral health held by dentistry students attending public and private universities in Erbil City.

2- Methodology

2-1 Participants and setting:

The current study designed as a cross-sectional survey (knowledge, attitude and practice - KAP- study) to know the knowledge, attitude and practices regarding oral health of clinical (fourth and fifth year) and preclinical (first, second and third year) students of two colleges of Dentistry. The study was carried out during the academic year from October 22nd 2022 to February 14th 2023 at Hawler Medical University (HMU) with total of 424 students and 458 students enrolled from Tishk International University (TIU). The researchers could estimate and compare the levels of oral health KAP in the two colleges of dentistry of both HMU and TIU utilizing HU-DBI (Hiroshima University Dental Behavioral Inventory) Questionnaire and to survey the sociodemographic and behavioral determinants of oral health among dental students.

2-2 Data collection:

The study was conducted at the department of dentistry at each public and private universities. An English questionnaire The HU-DBI utilized in the study, allocated among students in HMU and students in TIU, the questionnaire consisted of 20 items with dichotomous response

options (agree/disagree) demonstrated good reliability, some question were asked separately at the end of the questionnaire called modified (HU-DBI) questionnaire namely smoking, alcohol, using internet and visiting dentist at least once a year. Data were collected using a non-random sampling technique through pragmatic recruitment designed to collect information on target population in the two universities. Under graduate dental students were assured that their identity was completely anonymous and informed consent was provided which made the decision to participate voluntary, to avoid lack of accuracy, the respondents were provided with a full explanation concerning the nature of the study, allowed them to interact with the researcher for better understanding without leading their answers and revealing their intention, the study performed to provide us with efficient and accurate knowledge from students.

2-3 Data management and statistical analysis:

The data recorded on a specially designed questionnaire, collected and entered in the computer via Microsoft Excel worksheet (Excel 2016) and then analyzed using appropriate data system which is called Statistical Package for Social Sciences (SPSS) version 28 and the results were compared Based on Statistical inference to test the proposed associations between the independent variables (sociodemographic and behavioral) and the dependent variables (oral health KAP), HU-DBI questionnaire provided with 12 points which 5 points for knowledge, 3 points for attitudes, and 4 points for practice. The results presented as rates, ratio, frequencies, percentages and numerical variables were described by means and standard deviations ($\mu \pm SD$) in tables and figures and analyzed using Shapiro-Wilk test, Chi-squared test ($\chi 2$), Mann-Whitney test (U), Kruskal Wallis (H), Jonckheere-Terpstra test (JT), and logistic regression, analysis were used with confidence level (CI) of 95% and with a statistical significance level of ≤ 0.05.

2-4 Exclusion, Inclusion, criteria, criteria and considerations Ethical:

Exclusion criteria included graduated and post graduate students. A total of 915 under graduated dental students 33 respondents were excluded due to incompletely answered questionnaires and those who did not give consent. Out of 915 under graduated dental students of both genders included 882 answered the questionnaire completely and their forms were included in the data analysis process. This study was submitted to the Ethics and Scientific committees of Research Ethics Committee at Kurdistan Higher Council of Medical Specialties, the approval was given via official letter (No: 1563 on 8th September 2022).

3- Results and Discussion:

Hiroshima University Dental Behavioral Inventory (HU-DBI) with 20 items distributed among 882 students. The lowest score accomplished was 2 and the highest one was 12 with mean score 7.06 ± 1.71 Std. deviation. Table 1 shows that more than half (54.6%) of students were female and (45.4%) of them were male, the highest range of contributions (27.2%) were from 1st year students, 17.5% of them were 4th year student, the least contributed (13.3%)were 5th year students, 51.9% of students were at Tishk International University finally, 48.1% of them were students at Hawler Medical University.

Table 1: Gender, academic year and university affiliation of the participants.

Variables	Categories	Frequency	Percent
Gender	Male	400	45.4
	Female	482	54.6
Academic year	First year	240	27.2
	Second year	223	25.3
	Third year	148	16.8
	Fourth year	154	17.5
	Fifth year	117	13.3
University	Hawler Medical University	424	48.1
	Tishk International University	458	51.9
Total		882	100%

According to HU-DBI survey results Table 2 shows that more than half (55.8%) of participants agreed on not worrying much about visiting dentist, the majority (84.4%) of students' gum bled while brushing their teeth, most (72.7%) of them agreed on worrying about color of their teeth, more than half (62.1%) of respondents noticed white sticky, majority (90.6%) of them disagreed on using child sized tooth brush, 66.6% of participants disagreed on having false teeth in elderly ages, 19% of them were agreed on bothered by color of their gum, 82.1% disagreed on getting their teeth worse despite daily brushing, majority (88.7%) of them agreed on carefully brushing teeth, 72.6% of students disagreed on never taught professionally how to brush, 80% of them chose disagree option on cleaning teeth well without tooth paste, 87.2 of cases showed agree on checking teeth in the mirror after brushing, 73.6% of students agreed on worrying about having bad breath, 63.4% of them agreed on preventing gum disease with tooth brushing alone, 53.7% disagreed on visiting desist until having toothache, majority (81.1%) of students disagreed on using a dye, 78.6% disagreed on using hard bristles tooth brush, 74.6% of them disagreed on feeling brushed well only with strong stroke brushing, more than half(57.4%) of them agreed on taking too much time on brushing teeth and finally less than half (49.7%) of students disagreed on dentists giving acceptance on brushing their teeth.

Table 2: Results of HU-DBI items survey.

Items	Variables	Categories	Frequency	Percent
1	I do not worry much about visiting the dentist.	Agree	492	55.8
2	My gum tend to bleed when I brush my teeth	Disagree	744	84.4
3	I worry about the color of my teeth	Agree	641	72.7
4	I have noticed some white sticky deposits on my teeth	Disagree	548	62.1
5	I used a child-sized tooth brush	Disagree	799	90.6
6	I think that I cannot help having false teeth when I am old.	Disagree	587	66.6
7	I am bothered by the color of my gums	Agree	168	19
8	I think my teeth are getting worse despite my daily brushing	Disagree	724	82.1
9	I brush each of my teeth carefully	Agree	782	88.7
10	I have never been taught professionally how to brush.	Disagree	640	72.6
11	I think I can clean my teeth well without using tooth paste	Disagree	706	80
12	I often check my teeth in a mirror after brushing	Agree	769	87.2
13	I worry about having bad breath	Agree	649	73.6
14	It is impossible to prevent gum disease with tooth brushing alone	Agree	559	63.4
15	I put off going to dentist until I have a toothache	Disagree	474	53.7
16	I have used a dye to see how clean my teeth are	Disagree	715	81.1
17	I use a tooth brush that has hard bristles	Disagree	693	78.6
18	I do not feel I have brushed well unless I brushed with strong strokes	Disagree	658	74.6
19	I feel I sometimes take too much time to brush my teeth	Agree	506	57.4
20	I have had my dentist tell me that I brush very well	Disagree	438	49.7
Total			882	100

Table 3 reveals that most (74.5%) of students agreed on using smartphone/ computer longer than planned, most (79.7%) of participants disagreed on consuming tobacco/shisha at least once a week, majority (93.4%) of them disagreed on drinking alcohol at least once a week and more than

half (53.7%) of students agreed on visiting dentist/hygienist for regular check-up at least once a year.

Table 3: Smartphone use, tobacco consumption, alcohol drinking behavior among students and visiting dentist.

Variables	Categories	Frequency	Percent
I find myself using my smartphone\computer longer than I planned	Agree	657	74.5
	Disagree	225	25.5
I consume tobacco/shisha at least once a week	Agree	179	20.3
	Disagree	703	79.7
I drink alcohol at least once a week	Agree	58	6.6
	Disagree	824	93.4
I go to the dentist\hygienist for regular check-up at least once a year	Agree	474	53.7
	Disagree	408	46.3
Total		882	100%

Results of Table 4 determine that there was a non-significant statistical difference between HU-DBI score and gender and Drinking alcohol at least once a week and p-value was > 0.05. There was a statistically significant difference between HU-DBI score and university, HMU students accomplished higher scores with (mean of 7.18) compared to TIU students had lower scores with (mean of 6.95). There was a statistically significant difference between HU-DBI score and stage, clinical group had higher scores with (mean of 7.39) in comparison to mean pre-clinical of students was 6.76. There was a significant statistical difference between HU-DBI score and using smartphone / computer longer than planned, higher scores accomplished by students with less consuming time on smartphone/computer with (mean of 7.37) compared to students used smartphone / computer longer than planned with (mean of 6.95). There was a significant statistical difference between HU-DBI score and going to dentist / hygienist for regular check-up at least once a year, students that accomplished higher scores were visiting dentist/ hygienist for regular check-up with (mean of 7.42) while students who did not dentist / hygienist for regular check-up at least once a year had lower score (mean of 6.64). Chi square test was significant and p-value was < 0.05.

Table 4: Difference in HU-DBI scores regarding gender, university, college levels, and behavior of the participants.

Variable	Score	N	Mean	Std. Deviation	p-value	t-test

Gender	Male	400	7.06	1.720	0.987	Non-significant
	Female	482	7.06	1.711		
University	HMU	424	7.18	1.712	0.045	Significant
	TIU	458	6.95	1.710		
Stage	Pre-clinical	463	6.76	1.692	0.001	Highly significant
	Clinical	419	7.39	1.679		
Using smartphone / computer longer than planned	Yes	657	6.95	1.737	0.001	Highly significant
	No	225	7.37	1.610		
Consuming tobacco/ shisha at least once a week	Yes	179	6.85	1.762	0.027	Significant
	No	703	7.11	1.699		
Drinking alcohol at least once a week.	Yes	58	6.95	1.627	0.495	Non-significant
	No	824	7.07	1.721		
Going to dentist / hygienist for regular check-up at least once a year	Yes	474	7.42	1.516	0.001	Highly significant
	No	408	6.64	1.835		

Findings of Table 5 show that there was a non-significant statistical association between HU-DBI score and gender and item No. 4,5,6,8,9,12,13,14,15,18,19 and 20, and p-value was > 0.05. There was a significant statistical association between HU-DBI score and gender, most of males disagreed on items No.2, 10,11, 16 and 17 while most of females agreed on item No. 1,3 and 7. Chi square test was significant and p-value was <0.05.

Table 5: Association between HU-DBI score and gender of participants.

Variable	**Outcome**	**Female (n:400)**	**Male (n:482)**	**Chi square**	**p-value**
Item No. 1	Agree	252 (63%)	240 (49.8%)	Highly significant	< 0.001
Item No. 2	Disagree	323 (80.8%)	421 (87.3%)	Significant	0.009
Item No. 3	Agree	277 (69.3%)	364 (75.5%)	Significant	0.041
Item No. 4	Disagree	238 (59.5%)	310 (64.3%)	Non-significant	0.144

Item No. 5	Disagree	364 (91%)	435 (90.2%)	Non-significant	0.730
Item No. 6	Disagree	268 (67%)	319 (66.2%)	Non-significant	0.830
Item No. 7	Agree	96 (24%)	72 (14.9%)	Highly significant	0.001
Item no. 8	Disagree	335 (83.8%)	389 (80.7%)	Non-significant	0.253
Item no. 9	Agree	352 (88%)	430 (89.2%)	Non-significant	0.595
Item no. 10	Disagree	277 (69.3%)	363 (75.3%)	Significant	0.049
Item no. 11	Disagree	299 (74.8%)	407 (84.4%)	Highly significant	< 0.001
Item no. 12	Agree	350 (87.5%)	419 (86.9%)	Non-significant	0.840
Item no. 13	Agree	303 (75.8%)	346 (71.8%)	Non-significant	0.193
Item no. 14	Agree	255 (63.7%)	304 (63.1%)	Non-significant	0.888
Item no. 15	Disagree	204 (51%)	270 (56%)	Non-significant	0.154
Item no. 16	Disagree	311 (77.8%)	404 (83.8%)	Significant	0.025
Item no. 17	Disagree	301 (75.3%)	392(81.3%)	Significant	0.032
Item no. 18	Disagree	289 (72.3%)	369 (76.6%)	Non-Significant	0.162
Item no. 19	Agree	218 (54.5%)	288 (59.8%)	Non-significant	0.132
Item no. 20	Disagree	204 (51%)	234 (48.5%)	Non-significant	0.499

Outcomes of Table 6 show that there was a non-significant statistical association between HU-DBI score and level of participants and item No. 3,7,8,9,11,12,13 and 20, and p-value was > 0.05. There was a significant statistical association between HU-DBI score and level of participants, most of clinical students disagreed on items No.1, 2,4,5,6,10,15,16,17 and 18 while most of pre-clinical students agreed on item No. 14 and 7. Chi square test was significant and p-value was <0.05.

Table 6: Association between HU-DBI score and level of participants.

Variable	**Outcome**	**Pre-clinical (n:463)**	**Clinical (n=419)**	**Chi square**	**p-value**
Item No. 1	Disagree	179 (38.7%)	211 (50.4%)	Significant	0.001
Item No. 2	Disagree	370 (79.9%)	374 (89.3%)	Highly significant	< 0.001
Item No. 3	Agree	329 (71.1%)	312(74.5%)	Non-significant	0.290
Item No. 4	Disagree	327 (70.6%)	221 (52.7%)	Highly significant	< 0.001
Item No. 5	Disagree	408 (88.1%)	391(93.3%)	Significant	0.011
Item No. 6	Disagree	292 (63.1%)	295 (70.4%)	Significant	0.022
Item No. 7	Disagree	365 (78.8%)	349 (83.3%)	Non-significant	0.103
Item no. 8	Disagree	369 (79.7%)	355 (84.7%)	Non-significant	0.054

Item no. 9	Agree	407 (87.9%)	375 (89.5%)	Non-significant	0.524
Item no. 10	Disagree	299 (64.6%)	341 (81.4%)	Highly significant	< 0.001
Item no. 11	Disagree	362 (78.2%)	344 (82.1%)	Non- significant	0.152
Item no. 12	Agree	409 (88.3%)	360 (85.9%)	Non-significant	0.313
Item no. 13	Agree	328 (70.8%)	321 (76.6%)	Non-significant	0.056
Item no. 14	Agree	274 (59.2%)	285(68%)	Significant	0.008
Item no. 15	Disagree	209 (45.1%)	265 (63.2%)	Highly significant	<0.001
Item no. 16	Disagree	348 (75.2%)	367(87.6%)	Highly significant	<0.001
Item no. 17	Disagree	332 (71.7%)	361 (86.2%)	Highly significant	<0.001
Item no. 18	Disagree	319 (68.9%)	339 (80.9%)	Highly significant	<0.001
Item no. 19	Agree	233 (50.3%)	273 (65.2%)	Highly significant	<0.001
Item no. 20	Disagree	228 (49.2%)	216 (51.6%)	Non-significant	0.501

The present research found that dentistry students in the Kurdistan-Iraq area had an average HU-DBI score of 7.06±1.71. When compared to data from other European countries like Greece 6.86± 1.83 [(21)], Lithuania 6.35± 1.43 [(22)], and Romania 6.96 [(23)], the result obtained was higher, while data from other European countries like the United Kingdom 7.33 [(24)] were lower. However, compared to pupils in the Netherlands 8.0 ± 1.19, Portugal 7.74 ± 1.40 [(25)], and Switzerland 8.02 ±1.27 [(26)], German students scored worse compared to Poland 7.23 ± 1.45 [(27)] with Finland 7.15± 1.13. [(28)]

Participation was highest in the first level but decreased dramatically in the fifth. Level 5 accepted the fewest concurrency responses compared to other levels. This may result from increased awareness of periodontal disease prevention due to their increased clinical knowledge. This effect is consistent with the percentage of level 5 agree responses in Patiala, India [(29)], and roughly the same in Jordan. [(30)]

There were 10,229 female dental students and 5,346 male dental students recorded at German universities during the winter semester of 2021/2022, according to the most current report that was dismissed by the Federal Statistical Office of Germany (Wiesbaden, Hesse, Germany). The recent sample represented that women predominate in dentistry education in Erbil City. Furthermore, the percentage was 54.6% and 45.4% for females and males, respectively. The students were from two different universities which were Tishk International University, which has a higher presence and is a private university, while Hawler Medical University, which is a public university, shows a lower presence of participants. Moreover, the present analysis discovered that female dental students in Erbil had slightly better oral health KAB than their male peers. Mekhemar et al. 2021 used a modified HU-DBI among a sample of 171 dental students in Germany and found that females had significantly better oral health attitudes than their male peers. [(31)] Several HU-DBI-based studies of European dental students supported this finding of female

superiority, e.g., Croatia's HU-DBI score: female vs. male = 6.58 vs. 6.17 [32], Portugal 7.86 vs. 7.68 [33] and the United Kingdom 7.4 vs. 7.21. [34]

The advance from the first year to the final year of study within dental schools should not only be associated with the academic understanding and the professional skills needed for providing clinical benefits, but it should also reflect improving students' health thoughts and attitudes. This is because the students will be the primary basis of oral health-related knowledge, and they can play a crucial role in revising the health manners of their patients. [35, 36] Compared to Peker et al. and Neeraja R et al., which reported 30% and 32% of dental students visiting the dentist, our research found that 44.2% consented to see the dentist. [37] This was a far lower percentage than the one that was followed among Jordanian students (86%), as noted by Al Omari et al. According to Mani et al., 92.4% of dental students did not agree that going to the dentist should not drive too much anxiety, which was in line with our research findings. [38, 39]

The percentage of those who agreed that bleeding gum was a problem was the lowest. Their greater clinical experience may have led to a heightened understanding of the need to prevent periodontal disease. The proportion of people in Patiala, India, [29] who agreed with this conclusion is consistent with what we found here. Female students in our sample demonstrated a substantially more significant agreement with caring about the color of their teeth than the male students did in the same survey. Tin-Oo et al. [40] researched the variables affecting patient satisfaction with dental aesthetics. They found that dissatisfaction with patients' tooth color was substantially more distinguished among female patients in Malaysia than male patients.

Dental students were asked if they marked any white, sticky deposits on their teeth to decide their awareness of microbial dental plaque. A few people agreed with the information, which may be because they misunderstood the question and thought it asked if their teeth were clean rather than whether they were worried about plaque. [41] There is high disagreement among students about using child-sized toothbrushes.

A smaller proportion of students believed they "can't help having false teeth when they are old." As students advanced in their studies, they were more conscious of the restrictions and effects of dentition loss on their oral function and aesthetics. Also, as education levels rose, students became more observant of their dentition. [42] This ratio follows that in UAE. [43] Higher disagreement was recorded for being bothered by the color of my gums. In accumulation, most students had less understanding of oral health since they believed their teeth would become worse no matter how often they brushed them and had never been shown by a trained expert how to clean them. This may be explained by the student's need for more awareness about oral health and their lack of information when they first began their dentistry education. At the national level, there needs to be more effective school-based oral health programs that aim to assist children in enhancing and preserving their dental health, which is one probable reason for the problem. [44] Since dental students can only obtain this after they join dental school, oral health programs can be incorporated into the preclinical curriculum to encourage oral health awareness and understanding. This result follows UAE [33] and Britain. [24]. Higher agreement rates for "brush each of my teeth carefully" and "Check the teeth in the mirror after brushing" were documented

across all school years, indicating that dental students are becoming more concerned with their appearance. The rate is similar to that of Bangalore, India. [45]

However, stress regarding halitosis seriously improved understanding among students. Ashwath et al. [46] It was announced that Indian dentistry students effectively understood halitosis and a high prevalence of their self-perceived halitosis. It was shown that male dental students were more likely to address their lousy breath by themselves, whereas female dental students were more likely to utilize mouth rinses. Female dentistry students in Libya and Pakistan reported significantly greater levels of self-perceived halitosis than their male counterparts. Still, female dental students in Iraq reported substantially lower levels of self-perceived halitosis than their male contemporaries. However, stress regarding halitosis seriously improved understanding among students. [7, 48] Given that earlier investigations were completed that self-perceived halitosis among dental students was particularly associated with poor oral hygiene practices, our clinical students had been less bothered by halitosis because they had exhibited a considerably better behaviors-index score. [49] Thus, advancing dental education and enhanced oral health behaviors can lower self-perceived halitosis among dental students. Because most of them thought cleaning one's teeth was the most effective way to avoid dental caries and gum diseases, they believed gum disease could not be prevented by brushing one's teeth alone. Consequently, most dental students concluded that gum disease could not be stopped, [44] but they may need to be made aware of other methods and strategies for brushing. This is comparable to the total ratio of agreed replies in UAE. [43] Prevalence of dental students from all levels conveyed that they “put off going to the dentist until they have a toothache,” which is identical to frequencies displayed among dental students in Japan. [50] This might be due to the elevated price of dental services, worry of pain, prior bad dental backgrounds, and the time demanded for regular visits in agreement with the analysis done by Dagli et al. [51] The students had the most significant conflict with using the dye to determine their teeth' cleanliness. I have a toothbrush with bristles, and I get the impression that I have cleaned my teeth well unless I use strong strokes. In addition, extreme force while washing one's teeth, a potentially dangerous practice and one of the most prevalent elements donating to gingival recession, was anticipated to decrease. [52, 53] The majority of smoking in our sample was 20.3%, which is lower than the registered smoking prevalence among dental students 21% and medical students 28% and more elevated than physicians 17.6% and lower than reported nurses 28.8% in Germany. [54] There is an increased controversy regarding drinking alcohol at least once a week. Almost identical attending, I visit the dentist/hygienist for regular check-ups at least once a year.

When preclinical students' understanding, attitudes, and behaviors were compared to those of clinical students, it was found that their knowledge, attitudes, and behaviors were much more significant than those of the preclinical students. This may be because clinical students are gaining more expertise in oral health care because of their advanced time in touch with patients in clinical environments. In addition, as students advance through their dental education, they may become more aware of their general health and more sensitive to concerns linked to oral health. As a result, they may adopt improved oral health attitudes and behavior due to this awareness and heightened awareness. This result is consistent with a previous study done in Turkey, Lithuania, and India by

[22, 41, 55] respectively, which found that clinical students' oral health attitude and behavior are more elevated than preclinical. In contrast, Al-shiekh et al. found no differences in clinical students' oral health attitudes and conduct compared with preclinical students in Sudan.

These results recommend that fundamental dental topics, preventative courses, and clinical training contribute to a more well-rounded understanding of oral health as one advance in school. This result is in line with those from a study comparing the HU-DBI questionnaire in Greece and Japan [50], as well as those from studies conducted in Jordan [30], Nigeria [56], and India [29], all of which found that participants' attitudes and behaviors toward oral health improved as they gained more knowledge. However, Halboub et al. [57] found that dental students in Yemen's negative attitudes and behaviors toward oral health persisted despite their high levels of education. This advises students to absorb and apply what they learn in the classroom. The determinations may only apply to some of Egypt since the investigation was performed at a single private dentistry school. Hence, more research at Egypt's many dentistry schools is needed. This analysis found essential variations in undergraduate dentistry students' oral health beliefs and practices using the HU-DBI. As future healthcare providers, dental students need admission to preventative and self-care dental health education starting in their first year of dentistry school.

4- Conclusions

In general, dental students reported high levels of oral health KAB, as shown by a mean HU-DBI score of 7.06 ± 1.71, which is greater than what most European students reported in the past. The average HU-DBI score for females was somewhat higher than that of men. In particular, with regard to oral health practices, clinical students had a HU-DBI score that was considerably higher than that of preclinical students. Between the third and fourth year of dental school, corresponding to the time when prophylaxis, hygiene, and periodontology courses are taught, there was shown to be a statistically significant increase in oral health behaviors as well as a higher HU-DBI score. A statistically significant correlation existed between tobacco use and worse oral health knowledge, habits, and total HU-DBI score. Problematic internet and excessive alcohol use were associated with somewhat lower HU-DBI scores.

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