

## Dental health knowledge, attitude and behavior among first year university students, Mosul.

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### ABSTRACT

**Aims:** To determine the level of oral health knowledge, attitude and behavior among first year university students in Mosul city, to compare this level among different Colleges also between males and females. Then the obtained results were compared with those of other studies carried out on similar age groups in other countries, to see if there was any significant difference between them. **Materials and Methods:** Nine Colleges were randomly selected from Mosul University, from each College a fifty random sample was selected to complete the questionnaires in the classroom. The questionnaires' language was in Arabic included a number of questions related to oral health knowledge, attitude and behavior. Incomplete questionnaires were neglected. The size of the sample was 425 students, 216 males and 209 females. Statistical analysis included calculation of frequency, percentage of answers, and chi-square test. **Results:** Most of the students (93.2%) brushed their teeth and the majority of them (54.8%) engaged in once daily brushing, less than half of them (48.7%) using other means of teeth cleansing aids. A large percent of them had no ideas about the causes of dental caries (75.5%), and how to avoid it (76%). Their knowledge was poor regarding the age at which the primary and permanent teeth erupted (23.8%, 22.8%) and completed (18.6%, 27.3%). More than half of the students (54.6%) had gingival bleeding but they didn't know the cause of the bleeding (75.1%) and how to avoid it (75.5%). Most of them like eating sweets (82.1%). Small percent (22.4%) knew what is fluoride and its benefit in reducing dental caries (17.9%). Regarding sex differences, females' answers were in general better than those for males. **Conclusion:** College students seemed to have appropriate knowledge and behavior on some oral health topics but these were limited on the others. Health education needs to be done at universities for enhancing their knowledge attitude and behaviors.

**Key Words:** Knowledge, attitude, behavior, students.

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### INTRODUCTION

Oral diseases are clearly related to behavior. The prevalence of dental caries and periodontal diseases have decreased with improvements in oral hygiene and a decrease in the consumption of sugary products. This general favorable trend in reducing dental caries; However, this has not been seen in several developing countries<sup>(1)</sup> or in the Middle East.<sup>(2,3)</sup> In socio-economically developing countries, the change from traditional lifestyle to a Western lifestyle has, among other things, led to an increase in sugar consumption from food

and beverages, and in the form of chocolate/candy.<sup>(4)</sup> Higher caries prevalence is anticipated following increased consumption of sugar especially since for the majority, fluoridated tooth paste is not easily available. While twice-a-day tooth brushing seems to be an established practice in several industrialized countries such as the United Kingdom,<sup>(5)</sup> Italy,<sup>(6)</sup> Sweden<sup>(7)</sup> and Norway.<sup>(8)</sup> This goal is still very far from being realized in several other countries, including Turkey,<sup>(9)</sup> Lebanon,<sup>(10)</sup> Saudi Arabia,<sup>(2)</sup> Kuwait<sup>(11,12)</sup> and Iraq.<sup>(13-15)</sup>

In Iraq, liberalization of trade links with industrialized countries has brought about imports of greater quantities of sugar, also commercialized sugary products have increasingly gained social importance. There is evidence suggesting that commercialized sugary products are very popular, particularly among affluent urban residents. Researchers' and the general public's opinion about the developmental patterns of sugar intake appears, however this was based more on anecdote than on scientific evidence. So far few systematic data are available on health behavioral trends among the people of Iraq and its neighboring countries.

Today still, moderate numbers of youth confirm daily intake of commercialized sugary products.<sup>(16-19)</sup> Contrary to what has been observed in occidental studies<sup>(20)</sup>, females and urban respondents report snacking of sugared foods and drinks more frequently than do their males and rural counterparts.<sup>(21)</sup> Surveys of adolescents and young adults have shown that the majority of them and more females than males, engage in daily tooth cleaning.<sup>(16,17)</sup> Mosha and Scheutz<sup>(22)</sup> reported a lifetime prevalence of regular dental checkups in the general adult Tanzanian population, amounting to 51% among men and 43% among women.

Oral health knowledge is considered to be an essential prerequisite for health-related attitude and behavior<sup>(23)</sup>, although only a weak association seems to exist between knowledge, attitude and behavior in cross-sectional studies.<sup>(24, 25)</sup> Nevertheless, studies have shown that there is an association between increased knowledge and better oral health.<sup>(26, 27)</sup> Statistics on change in oral health-related behaviors across time may provide a valuable tool in the planning, implementation and evaluation of oral health promotion programs. Just as important from an oral health educational point of view, is information regarding the socioeconomic and regional distribution of oral health-related behaviors.

Since the College students represent the cornerstone for any civilized community, it is important that their own oral health knowledge is good and their oral health behavior conforms to professional

recommendations. With proper knowledge and oral health behavior, they can play an important role in the health education of individuals and groups<sup>(28-31)</sup>, and act as role models for lay people and the community at large.

Taking into consideration the importance of the College students as being the cornerstone of any civilized community, this study was intended to be conducted for the purposes of determining oral health knowledge, attitude and behavior among students from different Colleges of Mosul University in Mosul city; Comparing between the trends in oral health-related behavior among the selected Colleges during the academic year 2003-2004 and comparing the results obtained with those of other studies carried out on similar age groups in other countries in order to know the aspects of similarity and difference in the knowledge, attitude and behavior between Mosul community and other communities.

## **MATERIALS AND METHODS**

The analyses were based on data from survey to be undertaken at the University of Mosul, Iraq during the academic year 2003-2004. Nine Colleges were selected randomly which include Colleges of Medicine, Dentistry, Science (Department of Chemistry), Science (Department of Computer Sciences), Engineering (Department of Architecture), Engineering (Department of Electricity), Education (Department of Arabic Language), Art (Department of English Language), finally the Economy and Administration.

The sample consisted of 50 students from the freshman of each College. A questionnaire was distributed to all students (n = 450) whom were requested to remain in the classroom after the lecture and to fill in the questionnaire. The questionnaire's language was Arabic, in order to be concomitant with the language of some of the selected Colleges' curriculum. The participation was voluntary and the answers were anonymous. The total response rate was taken into consideration

The questionnaires consisted of:

1. Background and General Information: Age, sex, College.

2. Oral Health Knowledge, Attitude and Behavior, which include:

- Do you brush your teeth? (Yes, No).
- If the answer is "yes": (infrequently, once a day, more than once a day).
- The reasons for selection of a particular dentifrice: (taste, color, price, or containing fluoride).
- Uses of inter dental aids: (dental floss, tooth picks, inter dental brush, mouth gargle, or Miswak).
- Reasons and preventive measures of gum bleeding?
- Eating sweets? (like, dislike).
- Quantity of sugar intake? (a lot, a little).
- Role of sugar in dental caries and the preferred time to take sugars in order to minimize their harmful effect: (within meals, between meals).
- Causes of dental caries and how to prevent it?
- What is fluoride?
- Do you have missing teeth? Did you replace them?
- If you have carious teeth do you prefer conservative treatment or extraction?
- At what age the primary teeth erupted and when did the primary set complete.
- At what age the permanent teeth began to erupt and when did the permanent set complete?
- Visiting dental clinics: (regularly, when needed).
- Purpose of dental visit: (prophylaxis and preventive, extraction, conservative treatments, orthodontics, or for prosthodontics).

Data on knowledge, attitude and behavior were analyzed according to College. The data were processed by SPSS-PC version 9.0. The analyses included:

1. Descriptive: Calculation of frequency and percentage of answers for each College.
2. Inference: Using chi-square ( $\chi^2$ ) test to compare between the knowledge, attitude and behavior among the selected Colleges regarding all answers, and between males and females.

Significant difference among Colleges was considered when the value of  $p$  equals or less than 5% ( $p \leq 0.05$ ); while highly significant difference was taken into account when the value of  $p$  equals or less than 1%.

## **RESULTS AND DISCUSSION**

Nine Colleges were randomly selected from the University of Mosul. From each one, fifty students were randomly selected to complete the questionnaires in the classroom. Incomplete questionnaires were neglected. The size of the sample was 425 students, 216 males and 209 females.

Table (1) showed the distribution of the students into the nine Colleges. College (1): Economy and Administration; College (2): Computer Science; College (3): Medicine; College (4): Dentistry; College (5): Chemistry Science; College (6): Architecture Engineering; College (7): Arabic Education; College (8): English Art; and College (9): Electric Engineering.

Table (2) showed tooth brushing practice and the use of other cleansing aids. About 93.2% stated that, they brush their teeth and 6.8% did not. Good percent (100%) was obtained from Dental College students, while a lesser percent (88%) was obtained from Medicine College. The differences among the Colleges were statistically not significant. Females (95.2%) brush their teeth more than males (91.2%), but without significant difference. This agreed with other studies.<sup>(16, 17, 32)</sup>

Infrequent tooth brushing was 29.8% and the majority of them 54.8% engage in once daily tooth brushing. Small percent (15.4%) brush twice or more daily with a highest percent (27.2%) obtained from Arabic education students. The differences among the Colleges were significant ( $p \leq 0.05$ ).

Females (17.1%) brush their teeth more frequently than males (13.7%) which was statistically significant ( $p \leq 0.05$ ). This was due to the fact that females care with their health and appearance more than males.<sup>(33)</sup> A higher proportion of twice-a-day brusher have been reported in other studies.<sup>(2, 10, 11)</sup>

Regarding the use of other means of teeth cleansing aids rather than tooth brush such as dental floss, mouth gargle and Miswak, 48.7% used these means and 51.3% did not use such a means. The highest percent (71.7%) was obtained from Dental College. The differences among Colleges were statistically significant ( $p \leq 0.05$ ). Females (48.3%) used dental cleansing aids less than males (49.1%), which was not significant.

Table (1): Distribution of the students into the nine Colleges.

Colleges		Males	Females	Total
1	Economy and Administration	27	21	48
2	Computer Science	23	25	48
3	Medicine	27	23	50
4	Dentistry	22	24	46
5	Chemistry Science	22	24	46
6	Architecture Engineering	20	24	44
7	Arabic Education	29	17	46
8	English Art	19	29	48
9	Electric Engineering	27	22	49
<b>Total</b>		216	209	425

Table (2): Distribution of students' answers about teeth brushing practice and using other cleansing aids.

Colleges	Sex	Do you brush					Do you use other aids	
		Yes	Number	Infrequent	Once	Twice or More	Yes	Number
1	M	24 (88.9)	3 (11.1)	15 (62.5)	7 (29.2)	2 (8.3)	11 (40.7)	16 (59.3)
	F	19 (90.5)	2 (9.5)	7 (36.8)	10 (52.6)	2 (10.6)	9 (42.9)	12 (57.1)
	T	43 (89.6)	5 (10.4)	22 (51.2)	17 (39.5)	4 (9.3)	20 (41.7)	28 (58.3)
2	M	20 (87)	3 (13)	5 (25)	12 (60)	3 (15)	13 (56.5)	10 (43.5)
	F	24 (96)	1 (4)	4 (16.7)	14 (58.3)	6 (25)	13 (52)	12 (48)
	T	44 (91.7)	4 (8.3)	9 (20.5)	26 (59)	9 (20.5)	26 (54.2)	22 (45.8)
3	M	24 (88.9)	3 (11.1)	11 (45.8)	11 (45.8)	2 (8.4)	14 (51.9)	13 (48.1)
	F	20 (87)	3 (13)	5 (25)	12 (60)	3 (15)	13 (56.5)	10 (43.5)
	T	44 (88)	6 (12)	16 (36.4)	23 (52.3)	5 (11.3)	27 (54)	23 (46)
4	M	22 (100)	0 (0.0)	4 (18.2)	15 (68.2)	3 (16.6)	16 (72.7)	6 (27.3)
	F	24 (100)	0 (0.0)	4 (16.7)	17 (70.8)	3 (12.5)	17 (70.8)	7 (29.2)
	T	46 (100)	0 (0.0)	8 (17.4)	32 (69.6)	6 (13)	33 (71.7)	13 (28.3)
5	M	20 (90.9)	2 (9.1)	7 (35)	10 (50)	3 (15)	12 (54.5)	10 (45.5)
	F	22 (91.7)	2 (8.3)	4 (18.2)	14 (63.6)	4 (18.2)	11 (45.8)	13 (54.2)
	T	42 (91.3)	4 (8.7)	11 (26.2)	24 (57.1)	7 (16.7)	23 (50)	23 (50)
6	M	19 (95)	1 (5)	7 (36.8)	10 (52.6)	2 (10.6)	8 (40)	12 (60)
	F	24 (100)	0 (0.0)	4 (16.7)	17 (70.8)	3 (12.5)	9 (37.5)	15 (62.5)
	T	43 (97.7)	1 (2.3)	11 (25.6)	27 (62.8)	5 (11.6)	17 (38.6)	27 (61.4)
7	M	27 (93.1)	2 (6.9)	12 (44.4)	7 (25.9)	8 (29.7)	17 (58.6)	12 (41.4)
	F	17 (100)	0 (0.0)	4 (23.5)	9 (53)	4 (23.5)	7 (41.2)	10 (58.8)
	T	44 (95.7)	2 (4.3)	16 (36.4)	16 (36.4)	12 (27.2)	24 (52.2)	22 (47.8)
8	M	16 (84.2)	3 (15.8)	5 (31.3)	9 (56.3)	2 (12.4)	8 (42.1)	11 (57.9)
	F	27 (93.1)	2 (6.9)	6 (22.2)	15 (55.6)	6 (22.2)	13 (44.8)	16 (55.2)
	T	43 (89.6)	5 (10.4)	11 (25.2)	24 (55.8)	8 (19)	21 (43.8)	27 (56.2)
9	M	25 (92.6)	2 (7.4)	6 (24)	17 (68)	2 (8)	7 (25.9)	20 (74.1)
	F	22 (100)	0 (0.0)	8 (36.4)	11 (50)	3 (13.6)	9 (40.9)	13 (59.1)
	T	47 (95.9)	2 (4.1)	14 (29.8)	28 (59.6)	5 (10.6)	16 (32.7)	33 (67.3)
<b><math>\chi^2</math> Test (For Totals)</b>		$\chi^2 = 10.307$ , df= 8, $p = 0.244$ , NS		$X^2 = 27.400$ , df= 16, $p = 0.037$ , S		$\chi^2 = 19.418$ , df= 8, $p = 0.013$ , S		
<b>Total Male</b>		197 (91.2)	19 (8.8)	72 (36.6)	98 (49.7)	27 (13.7)	106 (49.1)	110 (50.9)
<b>Total Female</b>		199 (95.2)	10 (4.8)	46 (23.1)	119 (59.8)	34 (17.1)	101 (48.3)	108 (51.7)
<b><math>\chi^2</math> Test Between Genders</b>		$\chi^2 = 2.689$ , df= 1, $p = 0.101$ , NS		$\chi^2 = 8.554$ , df= 2, $p = 0.014$ , S		$\chi^2 = 0.024$ , df= 1, $p = 0.877$ , NS		
<b>Total</b>		396 (93.2)	29 (6.8)	118 (29.8)	217 (54.8)	61 (15.4)	207 (48.7)	218 (51.3)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

The students were asked do they prefer a filling or extraction if they have carious teeth, Table (3) showed that 83.5% of them preferred tooth filling over extraction (16.5%). Most of them knew that extraction is not the only treatment for a painful tooth which agreed with Al-Ansari et al.<sup>(32)</sup> Dental students prefer a filling (100%) over tooth extraction, while 68.8% of Computer Science College preferred filling over extraction (31.2%). The differences among Colleges were statistically highly significant ( $p \leq 0.01$ ). Females generally (84.7%) preferred filling more than males (82.4%) but without significances.

A large percent of the students had no ideas about the causes of dental caries (75.5%) and how to avoid it (76%). These students seemed to be not well aware about the most important aspects of oral health care as the effect of sugar consumption, home care practice and effects of fluoride. This agreed with Kawamura et al.,<sup>(34)</sup> but disagreed with Al-Ansari et al.<sup>(32)</sup> Of Dental students, 84.8% knew the causes of dental caries against 4.5% of Architecture Engineering students. While 90% of Medical students knew how to avoid dental caries against 11.4% of Architecture Engineering students. The differences among the Colleges were statistically highly significant ( $p \leq 0.01$ ). Females' knowledge were very slightly less than males' knowledge and without significances.

The students were asked about the age at which the primary and permanent teeth erupted and completed. Table (4) showed that their knowledge was poor since a large percent of them did not know the correct age. Oral health knowledge among dental students was good but not as high as could have been expected. The differences among the Colleges were statistically highly significant ( $p \leq 0.01$ ). Other studies have also showed that there was in general much work to do in improving dental health knowledge even among dental students.<sup>(32, 34)</sup>

The students were asked if they have gingival bleeding. Table (5) showed that 54.6% answered "yes" and 45.4% answered "no". This meant that a large percent of them had gingivitis which was due to insufficient or incorrect teeth brushing and documents the mal-use of other cleansing

aids which are necessary to obtain good oral hygiene. The differences among the Colleges were statistically significant ( $p \leq 0.05$ ). Male students complained from the gingival bleeding more than females since the latter brush more than males but the differences were not significant.

Regarding the cause of gingival bleeding, 24.9% knew the cause and 75.1% didn't. The best result (73.9%) was obtained from Dental students. The differences among the Colleges were statistically highly significant ( $p \leq 0.01$ ). The other question was how to avoid the bleeding; 24.5% of the students answered by regular teeth brushing, flossing and regular visit to the dentist, while 75.5% didn't know. Again, better result (76.1%) was obtained from Dental students. The differences among the Colleges were statistically highly significant ( $p \leq 0.01$ ). Although a large percent of the students (54.6%) complained from gingival bleeding, a large percent of them did not know the causes and how to avoid it. This indicated their poor knowledge and poor awareness of their oral health. Females' knowledge was slightly higher than males' but without significances.

Table (6) displayed the students' answers about eating sweets. Most of them (82.1%) like eating sweets and males (83.8%) like it more than females (80.4%). The differences among Colleges and between males and females were statistically not significant. Astrom and Masalu<sup>(35)</sup> found that only the minority of the students reported eating sweets. Although large percent of the students (74.8%) knew the harmful effect of eating sweets to their teeth, they continue to eat such large amount, which means that there was no connection between their knowledge of the harmful effect of the sweets with their behavior of eating it. About 43.1% of the students thought that eating sweets between meals is less harmful to their teeth, while 56.9% believed that eating sweets within meals is better to protect their teeth. Al-Ansari et al.<sup>(32)</sup> found that almost all students know the role of sugar consumption in caries etiology. The differences among Colleges were statistically highly significant ( $p \leq 0.01$ ). Females' and males' knowledge was close to each other, but without significances.

Table (3): Distribution of students' answers about dental caries.

Colleges	Sex	If you have carious tooth, do you prefer a filling or extraction		What are the causes of caries		How can you avoid caries	
		Filling	Extraction	Know	Don't Know	Know	Don't Know
1	M	19 (70.3)	8 (29.6)	6 (22.2)	21 (77.8)	4 (14.8)	23 (85.2)
	F	15 (71.4)	6 (28.6)	1 (4.8)	20 (95.2)	3 (14.3)	18 (85.7)
	T	34 (70.8)	14 (29.2)	7 (14.6)	41 (85.4)	7 (14.6)	41 (85.4)
2	M	16 (69.6)	7 (30.4)	3 (13)	20 (87)	2 (8.7)	21 (91.3)
	F	17 (68)	8 (32)	8 (32)	17 (68)	6 (24)	19 (76)
	T	33 (68.8)	15 (31.2)	11 (22.9)	37 (77.1)	8 (16.7)	40 (83.3)
3	M	21 (77.8)	6 (22.2)	2 (7.4)	25 (92.6)	3 (11.1)	24 (88.9)
	F	20 (87)	3 (13)	3 (13)	20 (87)	2 (8.7)	21 (91.3)
	T	41 (82)	9 (18)	5 (10)	45 (90)	5 (9)	45 (10)
4	M	22 (100)	0 (0.0)	19 (86.4)	3 (13.6)	19 (86.4)	3 (13.6)
	F	24 (100)	0 (0.0)	20 (83.3)	4 (16.7)	21 (87.5)	3 (12.5)
	T	46 (100)	0 (0.0)	39 (84.8)	7 (15.2)	40 (87)	6 (13)
5	M	18 (81.8)	4 (18.2)	6 (27.3)	16 (72.7)	6 (27.3)	16 (72.7)
	F	19 (79.2)	5 (20.8)	7 (29.2)	17 (70.8)	5 (20.8)	19 (79.2)
	T	37 (80.4)	9 (19.6)	13 (28.3)	33 (71.7)	11 (23.9)	35 (76.1)
6	M	18 (90)	2 (10)	0 (0.0)	20 (100)	2 (10)	18 (90)
	F	23 (95.8)	1 (4.2)	2 (8.3)	22 (91.7)	3 (12.5)	21 (87.5)
	T	41 (93.2)	3 (6.8)	2 (4.5)	42 (95.5)	5 (11.4)	39 (88.6)
7	M	22 (75.9)	7 (24.1)	4 (13.8)	25 (86.2)	6 (20.7)	23 (79.3)
	F	14 (82.4)	3 (17.6)	1 (5.9)	16 (94.1)	2 (11.8)	15 (88.2)
	T	36 (78.3)	10 (21.7)	5 (10.9)	41 (89.1)	8 (17.4)	38 (82.6)
8	M	17 (89.5)	2 (10.5)	6 (31.6)	13 (68.4)	4 (21.1)	15 (78.9)
	F	25 (86.2)	4 (13.8)	4 (13.8)	25 (86.2)	3 (10.3)	26 (89.7)
	T	42 (87.5)	6 (12.5)	10 (20.8)	38 (79.2)	7 (14.6)	41 (85.4)
9	M	25 (92.6)	2 (7.4)	7 (25.9)	20 (74.1)	7 (25.9)	20 (74.1)
	F	20 (90.9)	2 (9.1)	5 (22.7)	17 (77.3)	4 (18.2)	18 (81.8)
	T	45 (91.8)	4 (8.2)	12 (24.5)	37 (75.5)	11 (22.4)	38 (77.6)
$\chi^2$ Test (For Totals)	$\chi^2 = 29.636$ , df= 8, $p = 0.000$ , S		$\chi^2 = 113.555$ , df= 8, $p = 0.000$ , S		$\chi^2 = 116.430$ , df= 8, $p = 0.000$ , S		
Total Male	178 (82.4)	38 (17.6)	53 (24.5)	163 (75.5)	53 (24.5)	163 (75.5)	
Total Female	177 (84.7)	32 (15.3)	51 (24.4)	158 (75.6)	49 (23.4)	160 (76.6)	
$\chi^2$ Test (Between Genders)	$\chi^2 = 0.402$ , df= 1, $p = 0.526$ , NS		$\chi^2 = 0.001$ , df= 1, $p = 0.974$ , NS		$\chi^2 = 0.069$ , df= 1, $p = 0.792$ , NS		
Total	355 (83.5)	70 (16.5)	104 (24.5)	321 (75.5)	102 (24)	323 (76)	

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (4): Distribution of students' answers about the age at which the primary and permanent teeth erupted and completed.

Colleges	Sex	At what age the primary teeth began to erupt		When did the primary teeth completed		At what age the permanent teeth began to erupt		When did the permanent teeth completed	
		Know	Don't Know	Know	Don't Know	Know	Don't Know	Know	Don't Know
1	M	4 (14.8)	23 (85.2)	2 (7.4)	25 (92.6)	6 (22.2)	21 (77.8)	5 (18.5)	22 (81.5)
	F	2 (9.5)	19 (90.5)	2 (9.5)	19 (90.5)	1 (4.8)	20 (95.2)	1 (4.8)	20 (95.2)
	T	6 (12.5)	42 (87.5)	4 (8.3)	44 (91.7)	7 (14.6)	41 (85.4)	6 (12.5)	42 (87.5)
2	M	3 (13)	20 (87)	1 (4.3)	22 (95.7)	2 (8.7)	21 (91.3)	6 (26.1)	17 (73.9)
	F	8 (32)	17 (68)	4 (16)	21 (84)	6 (24)	19 (76)	3 (12)	22 (88)
	T	11 (22.9)	37 (77.1)	5 (10.4)	43 (89.6)	8 (16.7)	40 (83.3)	9 (18.8)	39 (81.2)
3	M	3 (11.1)	24 (88.9)	4 (14.8)	23 (85.2)	2 (7.4)	25 (92.6)	10 (37)	17 (63)
	F	3 (13)	20 (87)	1 (4.3)	22 (95.7)	2 (8.7)	21 (91.3)	8 (34.8)	15 (65.2)
	T	6 (12)	44 (88)	5 (10)	45 (90)	4 (8)	46 (92)	18 (36)	32 (64)
4	M	16 (72.7)	6 (27.3)	15 (68.2)	7 (31.8)	18 (81.8)	4 (18.2)	20 (90.9)	2 (9.1)
	F	17 (70.8)	7 (29.2)	18 (75)	6 (25)	20 (83.3)	4 (16.7)	21 (87.5)	3 (12.5)
	T	33 (71.7)	13 (28.3)	33 (71.7)	13 (28.3)	38 (82.6)	8 (17.4)	41 (89.1)	5 (10.9)
5	M	4 (18.2)	18 (81.8)	2 (9.1)	20 (90.9)	3 (13.6)	19 (86.4)	5 (22.7)	17 (77.3)
	F	8 (33.3)	16 (66.7)	4 (16.7)	20 (83.3)	4 (16.6)	20 (83.3)	1 (4.2)	23 (95.8)
	T	12 (26)	34 (74)	6 (25)	40 (75)	7 (15.2)	39 (84.8)	6 (25)	40 (75)
6	M	2 (10)	18 (90)	1 (5)	19 (95)	0 (0.0)	20 (100)	0 (0.0)	20 (100)
	F	5 (20.8)	19 (79.2)	4 (16.7)	20 (83.3)	4 (16.7)	20 (83.3)	4 (16.7)	20 (83.3)
	T	7 (15.9)	37 (84.1)	5 (11.4)	39 (88.6)	4 (9.1)	40 (90.9)	4 (9.1)	40 (90.9)
7	M	4 (13.8)	25 (86.2)	3 (10.3)	26 (89.7)	6 (20.7)	23 (79.3)	6 (20.7)	23 (79.3)
	F	4 (23.5)	13 (76.5)	5 (29.4)	12 (70.6)	5 (29.4)	12 (70.6)	5 (29.4)	12 (70.6)
	T	8 (17.4)	38 (82.6)	8 (17.4)	38 (82.6)	11 (23.9)	35 (76.1)	11 (23.9)	35 (76.1)
8	M	1 (5.3)	18 (94.7)	3 (15.8)	16 (84.2)	3 (15.8)	16 (84.2)	2 (10.5)	17 (89.5)
	F	6 (20.7)	23 (79.3)	4 (13.8)	25 (86.2)	5 (17.2)	24 (82.8)	6 (20.7)	23 (79.3)
	T	7 (14.6)	41 (85.4)	7 (14.6)	41 (85.4)	8 (16.7)	40 (83.3)	8 (16.7)	40 (83.3)
9	M	5 (18.5)	22 (81.5)	3 (11.1)	24 (88.9)	2 (18.5)	22 (81.5)	7 (26)	20 (74)
	F	6 (27.3)	16 (72.7)	3 (13.6)	19 (86.4)	2 (22.7)	17 (77.3)	6 (27.3)	16 (72.7)
	T	11 (22.4)	38 (77.6)	6 (12.2)	43 (87.8)	10 (20.4)	39 (79.6)	13 (26.5)	36 (73.5)
$\chi^2$ Test (For Totals)		$\chi^2 = 70.585$ , d.f= 8, $p = 0.000$ , S		$\chi^2 = 98.070$ , d.f= 8, $p = 0.000$ , S		$\chi^2 = 109.911$ , d.f= 8, $p = 0.000$ , S		$\chi^2 = 112.670$ , d.f= 8, $p = 0.000$ , S	
<b>Total Male</b>		42 (19.4)	174 (80.6)	34 (15.7)	182(84.3)	45 (20.8)	171(79.2)	61 (28.2)	155(71.8)
<b>Total Female</b>		59 (28.2)	150 (71.8)	45 (21.5)	164(78.5)	52 (24.9)	157(75.1)	55 (26.3)	154(73.7)
$\chi^2$ Test Between Genders		$\chi^2 = 4.525$ , d.f= 1, $p = 0.033$ , S		$\chi^2 = 2.353$ , d.f= 1, $p = 0.125$ , NS		$\chi^2 = 0.988$ , d.f= 1, $p = 0.320$ , NS		$\chi^2 = 0.198$ , d.f= 1, $p = 0.656$ , NS	
<b>Total</b>		101 (23.8)	324 (76.2)	79 (18.6)	346(81.4)	97 (22.8)	328(77.2)	116(27.3)	309(72.7)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (5): Distribution of students' answers about gingival bleeding.

Colleges	Sex	Do you have gum bleeding		What are the causes of gum bleeding		How can you avoid gum bleeding	
		Yes	No	Know	Don't Know	Know	Don't Know
1	M	18 (66.7)	9 (33.3)	6 (22.2)	21 (77.8)	8 (29.6)	19 (70.4)
	F	12 (57.1)	9 (42.9)	2 (9.5)	19 (90.5)	3 (14.3)	18 (85.7)
	T	30 (62.5)	18 (37.5)	8 (16.7)	40 (83.3)	11 (22.9)	37 (77.1)
2	M	14 (60.9)	9 (39.1)	7 (30.4)	16 (69.6)	6 (26.1)	17 (73.9)
	F	13 (52)	12 (48)	8 (32)	17 (68)	5 (20)	20 (80)
	T	27 (56.3)	21 (43.7)	15 (31.3)	33 (68.7)	11 (22.9)	37 (77.1)
3	M	13 (48.1)	14 (51.9)	4 (14.8)	23 (85.2)	3 (11.1)	24 (88.9)
	F	10 (43.5)	13 (56.5)	7 (30.4)	16 (69.6)	6 (26.1)	17 (73.9)
	T	23 (46)	27 (54)	11 (22)	39 (78)	9 (18)	41 (82)
4	M	8 (36.4)	14 (63.6)	15 (68.2)	7 (31.8)	17 (77.3)	5 (22.7)
	F	6 (25)	18 (75)	19 (79.2)	5 (20.8)	18 (75)	6 (25)
	T	14 (30.4)	32 (69.6)	34 (73.9)	12 (26.1)	35 (76.1)	11 (23.9)
5	M	11 (50)	11 (50)	6 (27.3)	16 (72.7)	5 (22.7)	17 (77.3)
	F	13 (54.2)	11 (45.8)	7 (29.2)	17 (70.8)	4 (16.7)	20 (83.3)
	T	24 (52.2)	22 (47.8)	13 (28.3)	33 (71.7)	9 (19.6)	37 (80.4)
6	M	11 (55)	9 (45)	1 (5)	19 (95)	1 (5)	19 (95)
	F	17 (70.8)	7 (29.2)	4 (16.7)	20 (83.3)	2 (8.3)	22 (91.7)
	T	28 (63.6)	16 (36.4)	5 (11.4)	39 (88.6)	3 (6.8)	41 (93.2)
7	M	18 (62.1)	11 (37.9)	4 (13.8)	25 (86.2)	5 (17.2)	24 (82.8)
	F	8 (47)	9 (53)	1 (5.9)	16 (94.1)	4 (23.5)	13 (76.5)
	T	26 (56.5)	20 (43.5)	5 (10.9)	41 (89.1)	9 (19.6)	37 (80.4)
8	M	11 (57.9)	8 (42.1)	2 (10.5)	17 (89.5)	1 (5.3)	18 (94.7)
	F	18 (62.1)	11 (37.9)	3 (10.3)	26 (89.7)	2 (6.9)	27 (93.1)
	T	29 (60.4)	19 (39.6)	5 (10.4)	43 (89.6)	3 (6.3)	45 (93.7)
9	M	19 (70.4)	8 (29.6)	4 (14.8)	23 (85.2)	6 (22.2)	21 (77.8)
	F	12 (54.5)	10 (45.5)	6 (27.3)	16 (72.7)	8 (36.4)	14 (63.6)
	T	31 (63.3)	18 (36.7)	10 (20.4)	39 (79.6)	14 (28.6)	35 (71.4)
<b><math>\chi^2</math> Test (For Totals)</b>		$\chi^2 = 17.355$ , d.f= 8, $p = 0.027$ , S		$\chi^2 = 77.353$ , d.f= 8, $p = 0.000$ , S		$\chi^2 = 85.251$ , d.f= 8, $p = 0.000$ , S	
<b>Total Male</b>		123 (56.9)	93 (43.1)	49 (22.7)	167 (77.3)	52 (24.1)	164 (75.9)
<b>Total Female</b>		109 (52.2)	100 (47.8)	57 (27.3)	152 (72.7)	52 (24.9)	157 (75.1)
<b>X<sup>2</sup>Test (Between Genders)</b>		$\chi^2 = 0.984$ , d.f= 1, $p = 0.321$ , NS		$\chi^2 = 1.194$ , d.f= 1, $p = 0.274$ , NS		$\chi^2 = 0.037$ , d.f= 1, $p = 0.847$ , NS	
<b>Total</b>		232 (54.6)	193 (45.4)	106 (24.9)	319 (75.1)	104 (24.5)	321 (75.5)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (6): Distribution of students' answers about eating sweets.

Colleges	Sex	Do you like eating sweet		Do you think that eating sweet is harmful to teeth			
		Yes	No	Yes	No	Within	Between
1	M	20 (74.1)	7 (25.9)	22 (81.5)	5 (18.5)	12 (54.5)	10 (45.5)
	F	19 (90.5)	2 (9.5)	17 (81)	4 (19)	9 (52.9)	8 (47.1)
	T	39 (81.3)	9 (18.7)	39 (81.3)	9 (18.7)	21 (53.8)	18 (46.2)
2	M	19 (82.6)	4 (17.4)	15 (65.2)	8 (34.8)	8 (53.3)	7 (46.7)
	F	19 (76)	6 (24)	21 (84)	4 (16)	12 (57.1)	9 (42.9)
	T	38 (79.2)	10 (20.8)	36 (75)	12 (25)	20 (55.6)	16 (44.4)
3	M	20 (74.1)	7 (25.9)	16 (59.3)	11 (40.7)	9 (56.3)	7 (43.7)
	F	19 (82.6)	4 (17.4)	15 (65.2)	8 (34.8)	7 (46.7)	8 (53.3)
	T	39 (78)	11 (22)	31 (62)	19 (38)	16 (51.6)	15 (48.4)
4	M	22 (100)	0 (0.0)	20 (90.9)	2 (9.1)	18 (90)	2 (10)
	F	21 (87.5)	3 (12.5)	22 (91.7)	2 (8.3)	20 (90.9)	2 (9.1)
	T	43 (93.5)	3 (6.5)	42 (91.3)	4 (8.7)	38 (90.5)	4 (9.5)
5	M	19 (86.4)	3 (13.6)	17 (77.3)	5 (22.7)	8 (47.1)	9 (52.9)
	F	18 (75)	6 (25)	21 (87.5)	3 (12.5)	10 (47.6)	11 (52.4)
	T	37 (80.4)	9 (19.6)	38 (82.6)	8 (17.4)	18 (47.4)	20 (52.6)
6	M	19 (95)	1 (5)	17 (85)	3 (15)	8 (47.1)	9 (52.9)
	F	20 (83.3)	4 (16.7)	16 (66.7)	8 (33.3)	9 (56.3)	7 (43.7)
	T	39 (88.6)	5 (11.4)	33 (75)	11 (25)	17 (51.5)	16 (48.5)
7	M	26 (89.7)	3 (10.3)	22 (75.9)	7 (24.1)	12 (54.5)	10 (45.5)
	F	11 (64.7)	6 (35.3)	16 (94.1)	1 (5.9)	7 (43.8)	9 (56.2)
	T	37 (80.4)	9 (19.6)	38 (82.6)	8 (17.4)	19 (50)	19 (20)
8	M	14 (73.7)	5 (26.3)	15 (78.9)	4 (21.1)	7 (46.7)	8 (53.3)
	F	21 (72.4)	8 (27.6)	20 (69)	9 (31)	9 (45)	11 (55)
	T	35 (72.9)	13 (27.1)	35 (72.9)	13 (27.1)	16 (45.7)	19 (54.3)
9	M	22 (81.5)	5 (18.5)	14 (51.9)	13 (48.1)	8 (57.1)	6 (42.9)
	F	20 (90.9)	2 (9.1)	12 (54.5)	10 (45.5)	8 (66.7)	4 (33.3)
	T	42 (85.7)	7 (14.3)	26 (53.1)	23 (46.9)	16 (61.5)	10 (38.5)
$\chi^2$ Test (For Totals)		$\chi^2 = 9.579$ , d.f= 8, p = 0.296, NS		$\chi^2 = 27.423$ , d.f= 8, p = 0.001, S		$\chi^2 = 24.387$ , d.f= 8, p = 0.002, S	
Total Male		181(83.8)	35 (16.2)	158 (73.1)	58 (26.9)	90 (57)	68 (43)
Total Female		168(80.4)	41 (19.6)	160 (76.6)	49 (23.4)	91 (56.9)	69 (43.1)
$\chi^2$ Test Between Genders		$\chi^2 = 0.843$ , d.f= 1, p = 0.359, NS		$\chi^2 = 0.654$ , d.f= 1, p = 0.419, NS		$\chi^2 = 0.000$ , d.f= 1, p = 0.987, NS	
Total		349(82.1)	76 (17.9)	318 (74.8)	107(25.2)	181(56.9)	137(43.1)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (7) showed that 24% of the students have missing teeth for any reason, 21.5% females and 26.4% males because females care with their teeth more than males. Only 31.4% of the students who had missing teeth replaced them by any type of dental prosthesis, 68.6% still without prosthesis. Some of them thought that it is difficult to adapt to it, other thought that it is not important, while other said that it is expensive. Females (37.8%) wear dental prosthesis more than males (26.3%) because females care with their health and appearance more than males.(33) The differences among Colleges and between males and females were statistically not significant.

Table (8) showed the students' answers about fluoride; 22.4% of them knew what is fluoride and the benefit of it in reducing or preventing dental caries, while 77.6% answered "don't know". The best result was obtained from Dentistry College (82.6%). The differences among Colleges were statistically highly significant ( $p \leq 0.01$ ).

Less than half of the students (40.2%) brush their teeth with fluoridated tooth paste. They stated that they selected the tooth paste, which contains fluoride, while the other (59.8%) selected their tooth paste according to its taste, color or price. All Dental students (100%) selected a tooth paste which contained fluoride. Regarding sex differences, females knew more about fluoride than males (23.4% and 21.3% respectively); More females (42.2%) than males (38.1%) used fluoridated tooth paste but without significant differences. Al-Ansari et al.<sup>(32)</sup> found that almost all students know the role of fluoride in caries prevention.

Table (9) explained the regularity of the students for attending dental treatment. Most of the students (82.1%) attended dental treatment only when needed, while regular visit reported (17.9%). The higher regular attendance was obtained from Dental students (93.5%); The lower attendance was recorded from Electric Engine-

ering students (2%). The differences among the Colleges were statistically highly significant ( $p \leq 0.01$ ). Al-Ansari et al.<sup>(32)</sup> found more regular dental attendance. Females had more regular attendance (19.6%) than males (16.2%) but without significant difference.

Regarding the type of dental treatment that performed during the attendance, most of them (34.6%) attended dental treatment for teeth filling followed by scaling and polishing (28.5%), tooth extraction recorded 19.8%, 7% for replacement of missing teeth, 5.4% for orthodontic treatment and a very little percent (4.7%) for preventive treatment.

The causes of dental attendance when compared between females and males were close to each other without significant differences.

In general, the students' answers for all the questions when compared among all the Colleges, oral health knowledge, attitude and behaviors among Dental students were higher than all other Colleges.

## CONCLUSION

It may be concluded that College students in Mosul University seemed to have appropriate knowledge on some oral health topics, but limited knowledge on the other. Much more health education needs to be done already at universities for establishing appropriate tooth brushing and flossing practice and for raising their knowledge level about the most common oral diseases; i.e., dental caries and periodontal diseases, including the initiation of these diseases, their prevention and treatment. Dental health education in Iraq is supposed to be organized by school curriculum but they did not cover all health topics. More concentration needs to be undertaken in the school curriculum regarding oral health science in addition to advertising campaigns and planning of preventive programs among university students in Iraq.

Table (7): Distribution of students' answers about missing teeth and the replacement of missing teeth.

Colleges	Sex	Do you have missing teeth		If you have missing teeth did you replace them	
		Yes	No	Yes	No
1	M	5 (18.5)	22 (81.5)	2 (40)	3 (60)
	F	6 (28.6)	15 (71.4)	2 (33.3)	4 (66.7)
	T	11 (22.9)	37 (77.1)	4 (36.4)	7 (63.6)
2	M	4 (17.4)	19 (82.6)	2 (50)	2 (50)
	F	5 (20)	20 (80)	2 (40)	3 (60)
	T	9 (18.8)	39 (81.2)	4 (44.4)	5 (55.6)
3	M	12 (44.4)	15 (55.6)	3 (25)	9 (75)
	F	4 (17.4)	19 (82.6)	2 (50)	2 (50)
	T	16 (32)	34 (68)	5 (31.3)	11 (68.7)
4	M	5 (22.7)	17 (77.3)	0 (0.0)	5 (100.0)
	F	4 (16.7)	20 (83.3)	2 (50)	2 (50)
	T	9 (19.6)	37 (80.4)	2 (22.2)	7 (77.8)
5	M	9 (40.9)	13 (59.1)	2 (22.2)	7 (77.8)
	F	4 (16.7)	20 (83.3)	2 (50)	2 (50)
	T	13 (28.3)	33 (71.7)	4 (30.8)	9 (69.2)
6	M	5 (25)	15 (75)	1 (20)	4 (80)
	F	7 (29.2)	17 (70.8)	2 (28.6)	5 (71.4)
	T	12 (27.3)	32 (72.7)	3 (25)	9 (75)
7	M	10 (34.5)	19 (65.5)	2 (20)	8 (80)
	F	7 (41.2)	10 (58.8)	2 (28.6)	5 (71.4)
	T	17 (37)	29 (63)	4 (23.5)	13 (76.5)
8	M	1 (5.3)	18 (94.7)	1 (100.0)	0 (0.0)
	F	3 (10.3)	26 (89.7)	1 (33.3)	2 (66.7)
	T	4 (8.3)	44 (91.7)	2 (50)	2 (50)
9	M	6 (22.2)	21 (77.8)	2 (33.3)	4 (66.7)
	F	5 (22.7)	17 (77.3)	2 (40)	3 (60)
	T	11 (22.4)	38 (77.6)	4 (36.4)	7 (63.6)
$\chi^2$ Test (For Totals)		$\chi^2 = 14.480$ , d.f= 8, p = 0.070, NS		$\chi^2 = 2.678$ , d.f= 8, p = 0.953, NS	
Total Male		57 (26.4)	159 (73.6)	15 (26.3)	42 (73.7)
Total Female		45 (21.5)	164 (78.5)	17 (37.8)	28 (62.2)
$\chi^2$ Test Between Genders		$\chi^2 = 1.374$ , d.f= 1, p = 0.241, NS		$\chi^2 = 1.534$ , d.f= 1, p = 0.215, NS	
Total		102 (24)	323 (76)	32 (31.4)	70 (68.6)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (8): Distribution of students' answers about fluoride.

Colleges	Sex	Do you know anything about fluoride		Do you brush your teeth with fluoridated toothpaste	
		Yes	No	Yes	No
1	M	2 (7.4)	25 (92.6)	6 (25)	18 (75)
	F	2 (9.5)	19 (90.5)	8 (42.1)	11 (57.9)
	T	4 (8.3)	44 (91.7)	14 (32.6)	29 (67.4)
2	M	3 (13)	20 (87)	6 (30)	14 (70)
	F	4 (16)	21 (84)	7 (29.2)	17 (70.8)
	T	7 (14.6)	41 (85.4)	13 (29.5)	31 (70.5)
3	M	2 (7.4)	25 (92.6)	8 (33.3)	16 (66.7)
	F	3 (13)	20 (87)	8 (40)	12 (60)
	T	5 (10)	45 (90)	16 (36.4)	28 (63.6)
4	M	18 (81.8)	4 (18.2)	22 (100.0)	0 (0.0)
	F	20 (83.3)	4 (16.7)	24 (100.0)	0 (0.0)
	T	38 (82.6)	8 (17.4)	46 (100.0)	0 (0.0)
5	M	6 (27.3)	16 (72.7)	5 (25)	15 (75)
	F	6 (25)	18 (75)	7 (31.8)	15 (68.2)
	T	12 (26.1)	34 (73.9)	12 (28.6)	30 (71.4)
6	M	1 (5)	19 (95)	7 (36.8)	12 (63.2)
	F	3 (12.5)	21 (87.5)	8 (33.3)	16 (66.7)
	T	4 (9.1)	40 (90.9)	15 (34.9)	28 (65.1)
7	M	6 (20.7)	23 (79.3)	8 (29.6)	19 (70.4)
	F	2 (11.8)	15 (88.2)	7 (41.2)	10 (58.8)
	T	8 (17.4)	38 (82.6)	15 (34.1)	29 (65.9)
8	M	2 (10.5)	17 (89.5)	6 (37.5)	10 (62.5)
	F	3 (10.3)	26 (89.7)	9 (33.3)	18 (66.7)
	T	5 (10.4)	43 (89.6)	15 (34.9)	28 (65.1)
9	M	6 (22.2)	21 (77.8)	7 (28)	18 (72)
	F	6 (27.3)	16 (72.7)	6 (27.3)	16 (72.7)
	T	12 (24.5)	37 (75.5)	13 (27.7)	34 (72.3)
$\chi^2$ Test (For Totals)		$\chi^2 = 117.278$ , d.f= 8, p = 0.000, S		$\chi^2 = 78.982$ , d.f= 8, p = 0.000, S	
<b>Total Male</b>		46 (21.3)	170 (78.7)	75 (38.1)	122 (61.9)
<b>Total Female</b>		49 (23.4)	160 (76.6)	84 (42.2)	115 (57.8)
$\chi^2$ Test Between Genders		$\chi^2 = 0.283$ , d.f= 1, p = 0.595, NS		$\chi^2 = 0.706$ , d.f= 1, p = 0.401, NS	
<b>Total</b>		95 (22.4)	330 (77.6)	159 (40.2)	237 (59.8)

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

Table (9): Distribution of students' answers about dental attendance.

Colleges	Sex	Do you visit the dentist regularly or only when needed		What are the causes of visiting the dentist					
		Regularly	When Needed	Exo	Filling	Scaling	Ortho	Replac.	Prev.
1	M	0 (0.0)	27 (100.0)	5 (18.5)	9 (33.3)	7 (25.9)	4 (14.8)	2 (7.5)	0 (0.0)
	F	1 (4.8)	20 (95.2)	5 (23.8)	6 (28.6)	5 (23.8)	2 (9.5)	1 (4.8)	2 (9.5)
	T	1 (2.1)	47 (97.9)	10 (20.7)	15 (31.3)	12 (25)	6 (12.5)	3 (6.3)	2 (4.2)
2	M	2 (8.7)	21 (91.3)	3 (13.1)	8 (34.8)	9 (39.1)	0 (0.0)	2 (8.7)	1 (4.3)
	F	4 (16)	21 (84)	5 (20)	9 (36)	4 (16)	2 (8)	2 (8)	3 (12)
	T	6 (12.5)	42 (87.5)	8 (16.7)	17 (35.4)	13 (27.1)	2 (4.2)	4 (8.3)	4 (8.3)
3	M	6 (22.2)	21 (77.8)	2 (7.4)	10 (37.1)	8 (29.6)	2 (7.4)	2 (7.4)	3 (11.1)
	F	5 (21.7)	18 (78.3)	3 (13.1)	8 (34.8)	9 (39.1)	0 (0.0)	2 (8.7)	1 (4.3)
	T	11 (22)	39 (78)	5 (10)	18 (36)	17 (34)	2 (4)	4 (8)	4 (8)
4	M	21 (95.5)	1 (4.5)	5 (22.7)	8 (36.4)	7 (31.8)	0 (0.0)	2 (9.1)	0 (0.0)
	F	22 (91.7)	2 (8.3)	4 (16.7)	9 (37.5)	8 (33.3)	1 (4.2)	2 (8.3)	0 (0.0)
	T	43 (93.5)	3 (6.5)	9 (19.6)	17 (37)	15 (32.6)	1 (2.1)	4 (8.7)	0 (0.0)
5	M	2 (9.1)	20 (90.9)	2 (9.1)	8 (36.4)	6 (27.3)	1 (4.5)	4 (18.2)	1 (4.5)
	F	5 (20.8)	19 (79.2)	4 (16.7)	9 (37.5)	4 (16.7)	3 (12.5)	2 (8.3)	2 (8.3)
	T	7 (15.2)	39 (84.8)	6 (13)	17 (37)	10 (21.8)	4 (8.7)	6 (13)	3 (6.5)
6	M	1 (5)	19 (95)	5 (25)	6 (30)	4 (20)	2 (10)	1 (5)	2 (10)
	F	1 (4.2)	23 (95.8)	7 (29.2)	8 (33.3)	8 (33.3)	0 (0.0)	1 (4.2)	0 (0.0)
	T	2 (4.5)	42 (95.5)	12 (27.3)	14 (31.9)	12 (27.3)	2 (4.5)	2 (4.5)	2 (4.5)
7	M	2 (6.9)	27 (93.1)	10 (34.5)	6 (20.7)	6 (20.7)	2 (6.9)	2 (6.9)	3 (10.3)
	F	0 (0.0)	17 (100.0)	5 (29.4)	4 (23.5)	6 (35.3)	1 (5.9)	1 (5.9)	0 (0.0)
	T	2 (4.3)	44 (95.7)	15 (32.6)	10 (21.8)	12 (26.1)	3 (6.5)	3 (6.5)	3 (6.5)
8	M	1 (5.3)	18 (94.7)	5 (26.3)	6 (31.6)	5 (26.3)	0 (0.0)	1 (5.3)	2 (10.5)
	F	2 (6.9)	27 (93.1)	3 (10.3)	13 (44.8)	10 (34.5)	2 (6.9)	1 (3.5)	0 (0.0)
	T	3 (6.3)	45 (93.7)	8 (16.6)	19 (39.6)	15 (31.2)	2 (4.2)	2 (4.2)	2 (4.2)
9	M	0 (0.0)	27 (100.0)	6 (22.2)	11 (40.7)	9 (33.3)	1 (3.8)	0 (0.0)	0 (0.0)
	F	1 (4.5)	21 (95.5)	5 (22.7)	9 (40.9)	6 (27.3)	0 (0.0)	1 (9.1)	0 (0.0)
	T	1 (2)	48 (98)	11 (22.5)	20 (40.8)	15 (30.6)	1 (2)	1 (4.1)	0 (0.0)
$\chi^2$ Test (For Totals)	$\chi^2 = 212.787$ , d.f= 8, p = 0.000, S			$\chi^2 = 36.083$ , d.f= 40, p = 0.647, NS					
<b>Total Male</b>	35 (16.2)	181 (83.8)	43 (19.9)	72 (33.3)	61 (28.2)	12 (5.6)	16 (7.4)	12 (5.6)	
<b>Total Female</b>	41 (19.6)	168 (80.4)	41 (19.6)	75 (35.9)	60 (28.7)	11 (5.3)	14 (6.7)	8 (3.8)	
$\chi^2$ Test (Between Genders)	$\chi^2 = 0.843$ , d.f= 1, p = 0.359, NS			$\chi^2 = 0.979$ , d.f= 1, p = 0.964, NS					
<b>Total</b>	76 (17.9)	349 (82.1)	84(19.8)	147(34.6)	121(28.5)	23(5.4)	30(7)	20(4.7)	

1: Economy and Administration; 2: Computer Sciences; 3: Medicine; 4: Dentistry; 5: Chemistry Sciences; 6: Architecture Engineering; 7: Arabic Education; 8: English Art; 9: Electric Engineering; Numbers between brackets represent percentages; df: Degree of freedom; NS: Not significant; S: Significant.

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