

## **Caries experience and treatment need among students of health and medical technologies college.**

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### **Abstract:**

250 students from Health and Medical Technology Collage, who aged was between (19-22 years) where choiced randomly from 1239 students(the total number of the college) and they were conducted to oral health survey. The aim of this study was to assess the oral health status and treatment needs for these students. The WHO criteria (1987) were used to assess the individual tooth status and treatment needs. This study has shown that the mean DMFT per subject was found to be 7.2 and there was no caries-free subject in the examined sample. Female had higher caries experience than male.

Results have demonstrated that the mean number of filled teeth per subject was 2.4. The mean of filled teeth in females were highly significant difference with males (P value < 0.001). The mean number of missing teeth per subject was 0.7. The mean of missing teeth in females was not significant with male (P value 0.93) and the mean number of decayed teeth per subject was found to be 4.2. The mean number of decayed teeth in female was not significant with males (P value 0.45). The percentage of teeth that need filling 96 %, teeth need crown abutment was 34%, teeth need bridge element was 36%, teeth need pulp care was 1.6 %, and teeth need extraction was 7.2%. From this study we can conclude that both age and gender had a statistically significant association with DMFT.

### **الخلاصة:**

250 طالب من كلية التقنيات الصحية والطبية والذين تتراوح اعمارهم بين 19-20 سنة والذين تم اختيارهم عشوائيا من 1239 طالب (العدد الكلي لطلاب الكلية) وخضعوا لتطبيق المسح الميداني لحالة الفم الصحية. الهدف من هذه الدراسة هو لتقييم الحالة الصحية للفم وقياس الحاجة للمعالجة بين هؤلاء الطلاب. نظام منظمة الصحة العالمية (WHO) لسنة 1987 استخدم لتقييم حالة السن وقياس حاجته للعلاج. هذه الدراسة اظهرت ان معدل الاسنان المتسوسة والمفقودة وذوات الحشوة (DMFT) هو 7.2. لا يوجد شخص من بين الاشخاص الذين تم فحصهم خالي من التسوس [ أي معدل (DMFT) له صفر]. أن نسبة الاناث كان اعلى من نسبة الذكور بالنسبة لمعدل التسوس. اظهرت النتائج ان معدل الاسنان ذوات الحشوة هي 2.4 سن/شخص، معدل الاسنان ذوات الحشوات في الاناث هو اكثر من الذكور وبفرق معنوي كبير (P<0,001). معدل الاسنان المفقودة هي (0.7) والفرق بين معدل الاسنان المفقودة في الاناث مقارنة مع الذكور هو فرق غير معنوي (P 0,93). ومعدل الاسنان المتسوسة هي 4.2 والفرق ايضا غير معنوي (p=0,45) بين معدل الاسنان المتسوسة في الاناث مقارنة مع الذكور.

ان نسبة الاسنان التي تحتاج الى حشوة كانت تمثل 96% من مجموع الطلاب الذين تم فحصهم ونسبة الاسنان التي تحتاج الى التيجان هي 34%، ونسبة الاسنان التي تحتاج الى جسور هي 36%، الاسنان التي تحتاج الى علاج في الجذر هي 1.6% والاسنان التي تحتاج الى قلع تمثل 7.2%.

ومن هذا البحث يمكن الاستنتاج ان هناك علاقة معنوية بين العمر والجنس مع DMFT .

**Introduction:**

Dental caries is a common chronic disease that causes pain and disability if left untreated, dental caries can lead to pain and infection, tooth loss and edentulous.<sup>1</sup> Klein designed and introduced the DMFT index as a sensitive tool to describe the distribution of the combining the number of decayed, missing and filled teeth.<sup>2</sup> A little information was available from studies concerning relation of DMFT with gender and age. Leonardi et al.<sup>3</sup> (1990) in Italy showed a higher presenting, of dental caries, among males compared to female (90% and 60%) respectively, however the DMFT value was nearly equal for both sexes. Hattab et al.<sup>4</sup> (2001) showed no statistical significant differences in dental caries between genders.

There are many studies reported an increase in prevalence and severity of dental caries among Iraqi population<sup>5,6,7,8</sup>. The WHO Global Oral Data Bank is an organized record of oral health throughout the world, including findings from standard oral health surveys administered by WHO and from published results of others. In many cases the data applies to large groups from the most populous parts of countries and provides working estimates rather than being fully representative. The data illustrates differences between countries and global regions. These selected DMF indicates for 12-year olds range widely, from a low of 0.7 for Nigerians to a high of 3.8 for Polish natives. The 2004 global average for 12-year olds is calculated as 1.6 decayed, missing, and filled teeth.<sup>9</sup>

A recent study for oral health in the U.S. in addition to Woodmansey<sup>10</sup> that study the prevalence of dental caries among International students at U.S.A. universities in the 1988-1991 National Health and Nutrition Examination Survey. This large national study reported an average DMF score of 6.1 for Americans aged 18-24 and 12.7 for those aged 18-103years . For 17-year old patients, 78% had experienced at least one carious lesion or dental filling<sup>11</sup>. Oral health of university student in the USA<sup>10</sup>, data demonstrates reduction in the numbers of decayed, missing and filled teeth of university students between 1960 and 2004. In 1960 the reported DMF score for students was 12.7 this score decreased to 9.9 in 1993 and to 7.2 in 2004. This means that 2004 students averaged 5.5 (43%) fewer decayed, missing and filled teeth than their 1960 counterparts this might be due to the use of preventive measures even fluoride in their water and milk.

A study for oral health in the USA in 1988- 1991 national health and nutrition examine survey reported an average DMF score of 6.1 for Americans aged 18-24 and 12.7 for those aged 18-103years, for 17 year old patients,78% had experienced at least one caries lesion or dental filling. Types of treatment need is related to the severity of dental caries several studies in Iraq concerning dental treatment need, among normal population reported that one surface restoration register the higher percentage of treatment needs followed by two or more surface restoration, then extraction.<sup>7, 12</sup>

The average number of decayed, missing and filled teeth of a sample population is reported as that population's DMF index. A lower DMF index indicates better dental health. Because the DMF score of individuals cannot decrease over them a direct relationship exists between the DMF index and age. Many studies were done to estimate caries experience among Students College, but there was no previous, and/or recent study involved the student's college of health and medical Technology so this study was established to estimate caries experience and treatment need among Students College of health and medical Technology.

**Materials and Methods:**

A total of 250 students from 1239 students (2004-2005) from different class from the Health and Medical Technology College were choice randomly, their age ranging from 19-22 years. Clinical examinations were done in dental clinic in the college using plane mouth mirrors and sharp probes. Findings were recorded by DMFT index according to the criteria of WHO standers<sup>13</sup>, which includes all teeth with decay experience or with temporary filling (D), teeth missing due to caries (M) and filled teeth also due to caries (F). No radiographs were taken. The type of treatment required, if any, was recorded, by using WHO standers<sup>13</sup>.

**Statistical analysis**

Data were translated into a computerized database structure. An expert statistical advice was sought for. Statistical analyses were computer assisted using SPSS version 13 (Statistical Package for Social Sciences). Frequency distribution for selected variables was done first. The difference in mean between 2 groups was assessed by t-test, while between more than 2 groups ANOVA test was used. Association between 2 categorical variables was assessed for statistical significance using chi-square test. The statistical significance, direction and strength of linear correlation between 2 quantitative variables were measured by Pearson's linear correlation coefficient. P value less than the 0.05 level of significance was considered statistically significant. Multiple linear regression models were used to study the net and independent effect of age and gender on mean DMFT.

**Results:**

The frequency distribution of the study sample by age and gender are shown in Table (1).

**Table 1: Frequency distribution of the study sample by age and gender.**

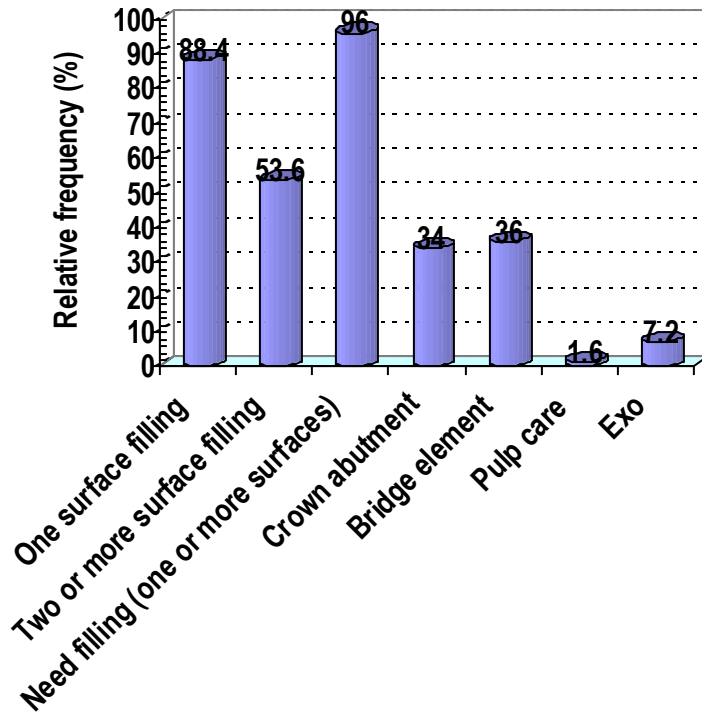
	<b>N</b>	<b>%</b>
1. Age in years		
19	20	8
20	73	29.2
21	69	27.6
22	88	35.2
2. Gender		
Male	78	31.2
Female	172	68.8
<b>Total</b>	<b>250</b>	<b>100</b>

The mean value of caries experience and standard of error of Dt, Mt, Ft and DMFT are shown in Table (2).

**Table 2: The mean carries experience in the total sample.**

<b>N = 250</b>	<b>Range</b>	<b>Mean</b>	<b>SE</b>	<b>95% confidence interval for mean</b>
Dt	(0 - 9)	4.2	0.17	(3.9 - 4.5)
Mt	(0 - 5)	0.7	0.07	(0.6 - 0.8)
Ft	(0 - 12)	2.4	0.2	(2 - 2.8)
DMFt	(1 - 15)	7.2	0.22	(6.8 - 7.6)

Treatment modalities that are needed for the examined sample are illustrated in figure (1) as a bar chart and it is clear from this bar chart that the need for filling has the highest level (96%) which represent about (240) students.



**Figure 1: Bar chart showing the relative frequency for the need of selected treatment modalities.**

While the need for pulp care took the lowest level (1.6%) which represent only four subjects from the whole sample.

Association between two categorical variables assessed for statistical significance for treatment need by age and gender done using chi square test and the result significant for age in all treatment need except in extraction it was not significant.

While between the genders the treatment need for filling, pulp care and extraction was significant (Table 3).

**Table 3: The rate of selected treatments needed by age and gender.**

	Total N	One surface filling		Two or more surface filling		Need filling (one or more surfaces)		Crown abutment		Bridge element		Pulp care		Exo	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
1. Age in years															
19	20	20	100	12	60	20	100	4	20	4	20	0	0	0	0
20	73	73	100	29	39.7	73	100	16	21.9	16	21.9	4	5.5	4	5.5
21	69	60	87	48	69.6	67	97.1	23	33.3	23	33.3	0	0	4	5.8
22	88	68	77.3	45	51.1	80	90.9	42	47.7	47	53.4	0	0	10	11.4
<b>P (Chi-square)=</b>		<b>&lt;0.001</b>		<b>0.004</b>		<b>0.018</b>		<b>0.003</b>		<b>&lt;0.001</b>		<b>0.02</b>		<b>0.23<sup>[NS]</sup></b>	
2. Gender															
Male	78	74	94.9	42	53.8	78	100	21	26.9	26	33.3	4	5.1	13	16.7
Female	172	147	85.5	92	53.5	162	94.2	64	37.2	64	37.2	0	0	5	2.9
<b>P (Chi-square)=</b>		<b>0.031</b>		<b>0.96<sup>[NS]</sup></b>		<b>0.03</b>		<b>0.11<sup>[NS]</sup></b>		<b>0.55<sup>[NS]</sup></b>		<b>0.003</b>		<b>&lt;0.001</b>	

**Table 4: The mean decay experience by age and gender.**

	N	Dt		Mt		Ft		DMFt	
		Mean	SE	Mean	SE	Mean	SE	Mean	SE
1. Age in years									
19	20	5.8	0.51	0.2	0.09	1	0.21	7	0.75
20	73	4	0.28	0.3	0.07	1.7	0.36	6	0.4
21	69	4.8	0.31	0.6	0.13	2.2	0.35	7.6	0.42
22	88	3.5	0.29	1.2	0.15	3.4	0.39	8	0.37
<b>P (ANOVA) =</b>		<b>&lt;0.001</b>		<b>&lt;0.001</b>		<b>0.001</b>		<b>0.002</b>	
<b>Pearson's linear correlation coefficient</b>		<b>r = 0.18 P=0.005</b>		<b>r = 0.33 P&lt;0.001</b>		<b>r = 0.24 P&lt;0.001</b>		<b>r = 0.20 P=0.002</b>	
2. Gender									
Male	78	4.4	0.26	0.7	0.12	1.2	0.28	6.3	0.41
Female	172	4.1	0.21	0.7	0.09	2.9	0.26	7.7	0.26
<b>P (t-test)=</b>		<b>0.45<sup>[NS]</sup></b>		<b>0.93<sup>[NS]</sup></b>		<b>&lt;0.001</b>		<b>0.003</b>	

Statistical analysis by ANOVA test between age groups for caries experience shows highly significance differences (p=0.002) and there is a linear correlation r= 0.20 between DMFT with all age groups, Table (4).

Also, (t- test) done to analysis the DMFT value between male and female and it was highly significant for Ft and DMFT while to Dt and Mt it was not significant, Table (4).

As shown in table 5, multiple linear regression models were used to study the net and independent effect of age and gender on mean DMFT. Both age and gender had a statistically significant association with DMFT. After adjusting for gender for each one year increase in age the DMFT is expected to increase by a mean of 0.9. Being a female is expected to increase DMFT by a mean of 1.7 compared to males. The model was statistically significant and able to explain 9% of observed variation in the DMFT.

**Table 5: Multiple linear regression model with DMFT as the dependent (response) variable using age and gender as the independent (explanatory) variables.**

	$\beta$	P
(Constant)	-11.8	0.01
Age in years	0.9	<0.001
Male gender compared to females	1.7	<0.001

$\beta$  is the partial regression coefficient

R<sup>2</sup>= 0.09

P (Model) <0.001

**Discussion:**

Results of this study have shown that the mean DMFT for the whole sample is 7.2 there was no caries free subjects this was disagree with Ghali<sup>5</sup> study in Iraq in 1989 that show the mean of DMFT among students of Baghdad University was 3.81, and caries free subjects constituted (14.2%), there were many reasons for increasing DMFT and even there was no caries free subject, this may be due to emigration of dentist from our country due to the circumstance of the security and low economic status of the most peoples. Female had higher caries experience than male, this may be due to eruption time for teeth in female more earlier than males so DMFT , become higher in comparison to males, other reason: previous Iraqi studies and surveys<sup>6,7,11</sup> show that malnutrition in femals was more than males so this will lead to weak teeth and faster caries process, this was agreed with Ghali<sup>5</sup> 1989 and Eugenio et al.<sup>14</sup>, 2005.

Results of this study show the mean number of decayed teeth (Dt) per subject was 4.2, its higher than the results reported by Barnard and Boyles<sup>15</sup> study among students of Australian national university which was 2.18 and higher than the study done by woodmansey<sup>10</sup> which was 2.10 for international students and 1.1 for U.S.A. and Canadian students.

The mean number of missing teeth (Mt) per subjects was 0.7 this was lower than that reported by Ghali which was 1.09. Also, lower than International students 1.7 and equal to U.S.A. and Canadian students reported by woodmansey<sup>10</sup> and the mean number of filled teeth per subjects 2.4 much lower than that reported by Barnard and Boyles<sup>15</sup> which was 10.6 and that reported by woodmansey (8.2 international student, 6.3 USA and Canadian student). .

Results of treatment need revealed that 96% of students need filling, when compared to a similar study carried out among university students in Iraq by Ghali<sup>5</sup> seen to be much higher. The range of age in this study (19-22) limiting the treatment need for filling much higher percentage than pulp care and extraction.

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