

# Dental Caries and Treatment Needs among 14 and 15 years Old Intermediate School Male Students in Al-Khalis City/Iraq

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**Abstract:** *Background:* Dental caries is a widely spread disease throughout the world that can be controlled but not eliminated, it occurs both in developing and developed countries, it is considered as one of the causative factors of tooth loss if it is untreated. The aim of this study was to determine the prevalence and severity of dental caries, as well as, to measure the dental treatment need of dental caries among 14 and 15 years old intermediate schoolmale students in Al-Khalis city/Iraq. *Materials and Methods:* The sample consisted of 735 intermediate school male students aged 14 and 15 years old (338 were aged 14 years old and 397 were aged 15 years old) from urban area in Al-Khalis city. In this study diagnosis and recording of dental caries and dental treatment needs were done according to criteria of WHO[1]. *Results:* In this study the prevalence of dental caries of the total sample was (87.62%). The DMFT and DMFS mean values were higher among 15 years old students than among 14 years old students with statistically no significant difference ( $p>0.05$ ). highest percentage of students were in need for one surface filling (82.31%) followed by two surface filling (54.42%). *Conclusions:* This study revealed a high prevalence of dental caries among 14 and 15 years old intermediate schools male students in Al-Khalis city, thus those students were on need for public health programs and dental caries treatment programs to prevent further progression of decay.

**Keywords:** Dental caries, treatment need, oral health status, 14 and 15 years old intermediate schools male students

## 1. Introduction

Dental caries is a common oral disease in children and adolescents, it is considered as one of the most important dental health problem in developing countries[2]. Dental caries is a multifactorial disease that occurs as a result of interplay between several factors as host factors (susceptible tooth and saliva), specific oral bacteria, dietary carbohydrates, and the presence of these carbohydrates in the oral cavity for sufficient time that subsequently metabolized by cariogenic bacteria leading to acid production which in turn results in demineralization process [3].

Several Iraqi studies revealed a high prevalence and severity of dental caries in permanent teeth especially for age of 15 years old students in different geographical locations [4-8]. Dental caries treatment is critical for both general and oral health [9]. It was found that dental treatment needs tend to become more complicated and increased with advancing age [5].

This study was designed to determine the prevalence and severity of dental caries as well as to measure the dental treatment need of dental caries among 14 and 15 years old intermediate school male students in Al-Khalis city/ Iraq.

## 2. Materials and methods

The sample involved an intermediate school male students aged 14 and 15 years old from urban areas in Al-Khalis city. The total sample consisted of 735 students, (338) were 14 years old and the remaining(397)for 15 years old students.

Permission was obtained from the General Directorate of Education of Al-Khalis city in order to meet individuals with no obligation, also special consent forms were prepared and distributed to the students' parents to obtain a permission for including their boys in this study and to have their full cooperation.

Diagnosis and recording of dental caries and dental treatment need were performed in accordance to the criteria described by WHO[1], the clinical examination was conducted by using plane mouth mirror as well as dental probe.

Data description, analysis and presentation were performed using Statistical Package for social Science (SPSS version 21). Statistical tests used in this study were Levene test and statistical t-test, additionally cluster bar chart was used to illustrates the distribution of students according to the type of dental treatment needs. Level of significance can be tested as probability of error (p-value) thus, Not Significant at P- value $>0.05$ , Significant at P- value $<0.05$ , and Highly significant at P- value $<0.01$ .

## 3. Results

Table (1) illustrates the distribution of the total sample by age. The sample consisted of 14 and 15 years old intermediate schools male students with a higher percentage of 15 years age group (54%) as compared to 14 years age group (46%).

In thisstudy the prevalence of dental caries for the total sample was (87.62%) as shown in Table (2).The mean values of DT, MT, FT, and DMFT among students for the total sample and by age are illustrated in Table (3). The

mean DMFT value was higher among 15 years old students than among 14 years old students, but the difference was found to be statistically not significant ( $p>0.05$ ).

The mean values of DS, MS, FS, and DMFS among students for the total sample and by age are illustrated in Table (4). In present study the mean value of DMFS was higher among 15 years old students than among 14 years old students, but the difference was found to be statistically not significant ( $p>0.05$ ). Concerning the DT and DS components, they constituted the major components of DMFT and DMFS fractions respectively, furthermore, the DMFT, DMFS, DT, and DS mean values were higher among 15 years old students.

The percentages of students with each category of dental treatment need by age are illustrated in Figure (1). A higher percentage of students were on need for one surface filling followed by those on need for two or more surface filling, while the lowest percentage was recorded for those on need for crown and veneer.

**Table 1:** Distribution of total sample by age

Age (Year)	No	%
14	338	46.0
15	397	54.0
Total	735	100

**Table 2:** Prevalence of dental caries among students by age

Age Year	No.	Caries status	
		No.	%
14	338	299	88.46
15	397	345	86.90
Total	735	644	87.62

**Table 3:** Caries experience (DMFT) and its components (DT, MT, FT) among students for the total sample and by age.

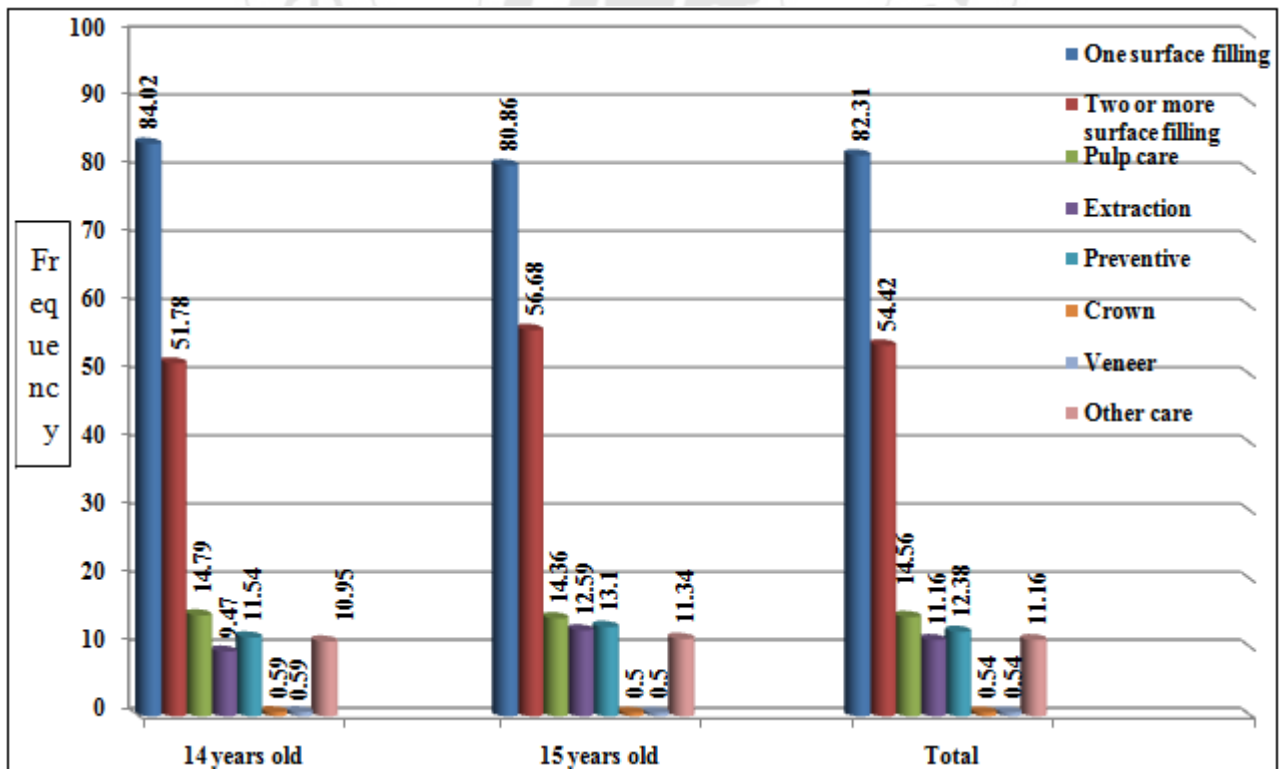
Age (Year)	Variables	Mean	±SE	Statistical test		
				t-test	df	P-value
14	DT	4.03	0.14	0.564	726.663	0.573*
15		4.14	0.14			
Total		4.08	0.10			
14	MT	0.15	0.02	0.022	733	0.982*
15		0.15	0.02			
Total		0.14	0.01			
14	FT	0.31	0.05	0.918	733	0.359*
15		0.25	0.04			
Total		0.27	0.03			
14	DMFT	4.48	0.17	0.241	733	0.810*
15		4.54	0.15			
Total		4.51	0.11			

\* Not Significant( $p>0.05$ )

**Table 4:** Caries severity (DMFS) and its components (DS, MS, FS) among students for the total sample and by age

Age (Year)	Variables	Mean	±SE	Statistical test		
				t-test	df	P-value
14	DS	5.46	0.21	1.191	732.289	0.234*
15		5.82	0.22			
Total		5.65	0.15			
14	MS	0.74	0.12	0.006	733	0.995*
15		0.74	0.10			
Total		0.74	0.07			
14	FS	0.46	0.08	0.416	733	0.677*
15		0.42	0.07			
Total		0.44	0.05			
14	DMFS	6.66	0.29	0.824	733	0.410*
15		6.98	0.27			
Total		6.83	0.19			

\* Not Significant( $p>0.05$ )



**Figure 1:** Distribution of students according to the type of treatment need required for total sample and by age

#### 4. Discussion

This study was conducted in urban area in Al-Khalis city among intermediate schools male students aged 14 and 15 years old, as no previous epidemiological studies concerning dentition status among these ages or any other ages in this city, so the results from this study can be considered as a base line data for comparison with other studies in Iraq and different areas of the world for the intermediate school students of the same ages.

In this study the prevalence of dental caries for the total sample was (87.62%). This high prevalence of dental caries may be attributed to variation in environmental conditions as low fluoride concentration in drinking water, as the concentration of fluoride in communal water supply in different areas of Iraq ranged from 0.12-0.22 ppm [5]. In comparison with previous Iraqi studies, the prevalence was found to be higher than that reported by other studies [5,10,11], and was lower than that reported by other Iraqi studies [7,8, 12]. Furthermore, DMFT mean value was higher than that recorded by other studies [5, 24], on the other hand it was lower than that reported by others [7, 8]. Additionally, the DMFS mean value was higher than that reported by other studies [6, 24], while it was lower than that reported by others [7, 8].

Variation in caries experience between this study and other Iraqi studies may be attributed to variation in dietary habits, oral hygiene measures, age, and dental health services between different governorates, so further studies may be needed to confirm this observation.

The mean DMFT and DMFS values were found to increase with advancing age, this result was found to be similar to that reported by previous Iraqi studies [5, 8,13-19], this finding may be attributed to accumulative and irreversible nature of dental caries (Rao) [20].

This study revealed that the (DS) fraction was higher than (MS) and (FS) components of DMFS both in the total sample and by age which may indicate a poor dental treatment, additionally the (MS) fraction was higher than (FS) fraction which indicate that even with the presence of dental treatment, but it was directed toward extraction rather than restoration of teeth, and the same finding was reported by many previous Iraqi studies [7,8, 21-25].

This study revealed that a highest percentage of students were in need for one surface filling, and this indicate the need for restorative treatment to prevent the progression of dental caries, and this finding was in line with that recorded by many previous Iraqi studies [6, 7, 10, 25, 26].

The high prevalence and dental treatment need of dental caries among intermediate school male students in urban area of Al-Khalis city may indicate the need for public or school preventive programs for those students, including dental health education as well as improvement of dental knowledge and attitude toward proper oral hygiene and nutrition.

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