

# Assessment of Dental Caries among Internally Displaced Children in Baghdad

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## ABSTRACT

**Background:** The internally displaced children are vulnerable groups have less access to dental services, worse oral health, and bear a disproportionate burden of oral diseases.

**Aim of the study:** This study was conducted on group of internally displaced children living in Baghdad governorate camps to measure their dental caries prevalence and experience and find out the association between dental caries and the duration of displacement in camps.

**Subjects and methods:** A sample of 1393 children were selected, 567 internally displaced children from camps in Baghdad governorate and 826 school children as control matching in age and gender. The age of children ranged from 5-12 years old. Oral examination was performed using WHO 2013 criteria, to measure dental caries using CPI probe.

**Results:** There were a significant difference of dmfs and dmft between Internally displaced children and Schoolchildren. Caries free Internally displaced children were 39.2% and 30% among school children. There was no statistically significant correlation between camp duration and dental caries experience in deciduous teeth while a significant relation was found in permanent teeth.

**Conclusion:** This study revealed an increase in dental caries experience with increase in duration of displacement. Hence this survey highlighted the need of internally displaced children to dental health education programs and preventive measures and give information for monitoring the caries which is helpful for policy makers.

**Key words:** Internally displaced children, Dental caries, CPI. (J Bagh Coll Dentistry 2018; 30(3): 28-31)

## INTRODUCTION

Migration, both forced and voluntary, has long been a major part of Iraqis' lives. Violence and wars which begun in December 2013, has displaced three million Iraqis, which had precipitated a complex and urgent humanitarian situation <sup>(1,2)</sup>. Humanitarians estimated during 2017; a 1.1 million of displaced people were expected to be resident in emergency sites and camps <sup>(3)</sup> an estimation of 50,760 families, 304,560 internally displaced persons (IDPs) residing in Baghdad governorate came from Anbar Governorate, Ninewa and Salahaldin and other governorates <sup>(4)</sup>.

Internally displaced persons are considered as vulnerable groups have less access to dental services, poor oral health, and suffer from extreme burden of oral diseases <sup>(5)</sup>. A study were done on Syrian <sup>(6)</sup> refugee found out dental caries  $1.6 \pm 2.6$  teeth. and internally displaced children in Kosovo <sup>(7)</sup> and Pakistan <sup>(8)</sup>.

The internally displaced children with low socioeconomical level and low parents educational level experienced poor oral hygiene and increase in dental caries <sup>(9)</sup>.

Dental caries is a worldwide chronic disease affecting all age groups, both gender, races, and all geographic residency, causing pain, groups; caries free (0), 1-5 surfaces, 6-10 surfaces and more than 10 surfaces affected by dental local and systematic infection and progress into tooth pulp ending with dental abscess formation if

untreated. Also, it affects children's general health, growth and development, nutrition and quality of life <sup>(10,11)</sup>.

Iraq is one of the developing countries that showed an increase in caries prevalence and severity. Many studies found that caries prevalence was low <sup>(12-16)</sup> while other studies showed high prevalence <sup>(17-22)</sup>.

This study was conducted on group of internally displaced children (IDC) living in Baghdad governorate camps to find out the association of dental caries with duration of displacement in comparison to schoolchildren living near camps.

## SUBJECTS AND METHODS

A sample of 567 internally displaced children were selected from different camps in Baghdad governorate and 826 schoolchildren matching with age and gender as control aged 5-12 years old. The internally displaced children (IDC) were originated from Alanbar governorate Salahaldin and Ninewa.

Intra oral examination of dental caries status was recorded according to WHO 2013(23) using CPI probe. Dental caries was measured by dmft/s for deciduous teeth and DMFT/S for permanent teeth. Dental caries indices: tooth (dmft, DMFT) and surface levels (dmfs, DMFS). The dmfs/DMFS percentage divided into four groups; caries free (0), 1-5 surfaces, 6-10 surfaces and more than 10 surfaces affected by dental caries. The duration of displacement was divided into 3

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groups 1-12, 13-24, more than 24 months. The data were grouped by statistical quartile.

The statistical data analysis was approached by using statistical package (SPSS) ver. (23.0) in order to analyze and assess the results of this study through application of descriptive data analysis, by frequencies, and percentages. Inferential data analysis, these types of analysis were used to test hypotheses by accept or reject it, which included the following; Contingency Coefficients (C.C.) test: Estimating of the association table for finding cause's relationship-test and Spearman Rank Correlation test.

**RESULTS:**

The children age range from 5-12 years with mean age of 8.70±SD 2.01 for IDC and 8.72±SD1.95 with 278 (49%) boys IDC and SC=404 (48.9), girls 289 (51%) IDC and 422(51.1%)SC. The percentage of children who spend two years in camps was 81.1%, and 18.9% spent more than two years.

Prevalence of children with caries free deciduous teeth were 39.2% among IDC and 30% among school children. Number and percentage of decayed surfaces were higher in IDC than SC. Missing surfaces (ms) which means extracted teeth due to caries; and filled teeth are higher among SC than IDC. There were highly significant association in caries prevalence between IDC and SC as shown in table 1 with comparison significant (C.S.).

Table 2 demonstrates caries prevalence in permanent dentition, children with caries free permanent teeth were 74.8% among IDC and 77.4% among school children. All the components of DMFS showed no significant differences between IDC and school children. The percentage of children having 1-5 teeth affected with caries in IDC (22.6%) are more than that of school children (18.9%).

IDC had significantly lower caries experience in the deciduous dentition (dmfs =6.16±0.32 and dmft=2.71±0.12) than school children (dmfs=8.06±0.28 and dmft=3.22±0.10). However, in the permanent dentition caries experience showed no statistically significant differences between IDC (DMFS =0.86±0.07 and =0.60±0.05) and school children (DMFS=0.94±0.08 and DMFT=0.64±0.04) (Table 3). No statistically significant differences between IDC (DMFS=0.86±0.07 and DMFT=0.60±0.05) and school children (DMFS =0.94±0.08 and DMFT=0.64±0.04) (Table 3).

The caries severity (dmfs) for girls and boys showed no significant association for both IDC and school children (Table 4). Table 5 shows that there was no statically significant correlation

between camp duration and caries experience dmfs and its components (Table 5). While for permanent teeth there was a significant difference between the groups with caries experience increasing with camp duration (F=4.957, df=2, p=0.007) as shown in figure 1.

**Table 1: Distribution of the children according to dmfs and its components.**

Dental caries	IDC		SC		C.S. (*) p-value	
	No.	%	No.	%		
<b>Ds</b>	300	52.9	578	31.4		
<b>Ms</b>	41	7.2	142	17.2		
<b>Fs</b>	4	0.7	15	1.8		
<b>dmfs</b>	<b>0</b>	222	39.1	248	30.0	C.C.=0.119 p=0.000 (HS)
	<b>1 – 5</b>	137	24.2	189	22.9	
	<b>6 – 10</b>	101	17.8	158	19.1	
	<b>&gt; 10</b>	107	18.9	231	28.0	
	<b>Total</b>	567	100	826	100	

**HS: Highly Significant at p<0.01; based on a contingency coefficient (C.C.) tests**

**Table 2: Distribution of the children according to DMFS and its components.**

Dental caries	IDC		SC		C.S. (*) p-value	
	No.	%	No.	%		
<b>DS</b>	132	23.2	159	19.2		
<b>MS</b>	5	0.9	15	1.7		
<b>FS</b>	6	1.1	13	1.6		
<b>DMFS</b>	<b>0</b>	424	74.8	639	77.4	C.C.=0.054 p=0.259 (NS)
	<b>1 – 5</b>	128	22.6	156	18.9	
	<b>6 – 10</b>	13	2.3	25	3	
	<b>&gt; 10</b>	2	0.3	6	0.7	
	<b>Total</b>	567	100	826	100	

**NS=Not Significant p>0.05; based on a contingency coefficient (C.C.) tests.**

**Table 3: The mean and the standard error of dental caries experience of the children.**

Variable	Sample	Mean	Std. Error	t	C.S. (*) p-value
<b>dmfs</b>	<b>IDC</b>	6.16	0.32	4.326	p=0.000 HS*
	<b>SC</b>	8.06	0.28		
<b>dmft</b>	<b>IDC</b>	2.71	0.12	3.180	p=0.002 HS*
	<b>SC</b>	3.22	0.10		
<b>DMFS</b>	<b>IDC</b>	0.86	0.07	0.602	p=0.548 NS
	<b>SC</b>	0.94	0.08		
<b>DMFT</b>	<b>IDC</b>	0.60	0.05	0.578	p=0.564 NS
	<b>SC</b>	0.64	0.04		

**\*HS: Highly Sig. at p<0.01; NS: Not sig.at p>0.05, based on t-test.**

**Table 4: Caries severity dmfs of children distributed according to gender.**

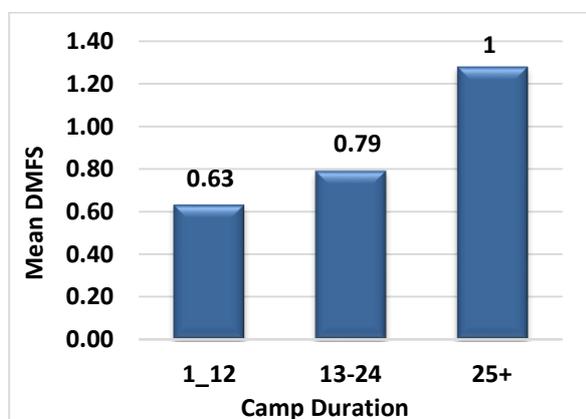
	Dmfs	Gender				Total		C.S. (*) p-value
		Boys		Girls		N	%	
		N	%	N	%			
IDC	0	106	38.1	116	41.1	222	39.1	CC=0.081 p=0.293 NS
	1-5	60	21.6	77	25.7	137	24.2	
	6-10	53	19.1	48	16.1	101	17.8	
	>10	59	21.2	48	16.1	107	18.9	
	Total	278	100	289	100	567	100	
SC	0	99	24.5	149	35.3	248	30.0	CC=0.196 p=0.862 S
	1-5	98	24.3	91	21.6	189	22.9	
	6-10	81	20.0	77	18.2	158	19.1	
	>10	126	31.2	105	24.9	231	28.0	
	Total	404	100.0	422	100.0	826	100.0	

S= Sig. at p<0.05; NS: Not sig.at p>0.05 based on a contingency coefficient (C.C.) tests.

**Table 5: Mean and standard error and the correlation of dental caries in deciduous teeth of internally displaced children according to duration of living in camps.**

	Displacement Duration (months)	N	Mean	SE	C.S. (*) p-value
ds	1 - 12	229	2.64	0.33	r=-0.082 p=0.051
	13 -24	231	2.71	0.37	
	25+	107	2.05	0.44	
ms	1 - 12	229	0.63	0.14	r=-0.065 p=0.121
	13 -24	231	0.54	0.15	
	25+	107	0.37	0.18	
fs	1 - 12	229	0.01	0.00	r=0.002 p=0.963
	13 - 24	231	0.04	0.02	
	25+	107	0.00	0.00	
dmfs	1 - 12	229	5.46	0.44	r=-0.051 p=0.222
	13 -24	231	5.94	0.49	
	25+	107	4.30	0.61	

NS: Non Sig. at p>0.05; Testing based on Spearman Rank Correlation test.



**Figure 1: Mean dental caries in permanent teeth of internally displaced children according to duration of living in camps.**

## DISCUSSION

The caries free IDC was 39% of children which more than SC 30% and more than study done in Jordan<sup>(24)</sup> and more than IDC in Kosovo<sup>(6)</sup>.The dmft of IDC was found to  $2.7 \pm 0.12$  and which considered moderate according to WHO 2013<sup>(20)</sup> (Moderate 2.7– 4.4) and less than school children dmft  $3.23 \pm 0.10$  and lower than<sup>(25)</sup>.The DMFT of IDC  $0.60 \pm 0.05$  which is very low in a accordance to WHO 2013 (Very low <1.2),also lower than other studies done on IDC in Iran, Kosovo and Pakistan and Syrian refugee teeth<sup>(6,7,9,26)</sup>. This low caries experience is may be due to their displacement situation which made them far from cariogenic food like sweet candies and sugary drinks in addition to low socioeconomic in area of origin; most of children who lived in camps came from periurban areas<sup>(28)</sup>

In this study girls had higher prevalence than boys but with no significant differences which is in disagree with previous studies<sup>(16,29)</sup> and agreement with others<sup>(13,14,17,30,31)</sup>,this can be explained by earlier eruption of teeth in girls, hence longer exposure of girls' teeth to the cariogenic oral environment in addition to easier access to food supplies by women and frequent snacking during food preparation<sup>(31)</sup>.

The duration of living in camps had no significant association with dmfs and all its component, also mean DMFS increase with increasing duration (statistically significant p<0.05). This survey highlighted the need of internally displaced children to dental health education programs and preventive measures and give information for monitoring the caries trend which is helpful for policy makers.

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## الخلاصة

**الخلفية:** الأطفال النازحون هم من الفئات الضعيفة غير المحصنة الذين لديهم قدرة أقل على الحصول على خدمات العلاجية السنية صحة فموية سيئة ، ويتحملون عبئاً من الأمراض الفموية **الهدف من الدراسة:** أجريت هذه الدراسة على مجموعة من الأطفال النازحين داخلياً الذين يعيشون في مخيمات محافظة بغداد لقياس انتشار تسوس الأسنان لديهم ومعرفة الارتباط بين تسوس الأسنان ومدة النزوح في المخيمات. **الأشخاص والأساليب:** تم اختيار عينة من 1393 طفلاً، 567 من الأطفال النازحين داخلياً من المخيمات في محافظة بغداد و 826 من أطفال المدارس كعينة ضابطة متجانسة في العمر والجنس. تراوحت أعمار الأطفال بين 5-12 سنة. تم إجراء فحص فموي باستخدام معايير منظمة الصحة العالمية 2013 ، لقياس تسوس الأسنان باستخدام مسبار CPI. **النتائج:** كان هناك فروق كبيرة بين dmfs و dmft بين الأطفال النازحين داخلياً وبين تلاميذ المدارس. بلغت نسبة الأطفال النازحين بدون تسوس 39.2% و 30% بين أطفال المدارس. لم تكن هناك علاقة ارتباطية ذات دلالة إحصائية بين مدة النزوح في المخيم التسوس في الأسنان اللبنية في حين تم العثور على علاقة كبيرة في الأسنان الدائمة. **الاستنتاج:** كشفت هذه الدراسة عن زيادة في تسوس الأسنان مع زيادة مدة النزوح. ومن ثم أبرزت هذه الدراسة عن حاجة الأطفال النازحين داخلياً إلى برامج التثقيف في مجال صحة الأسنان والتدابير الوقائية وإعطاء معلومات لرصد التسوس وهو أمر مفيد لصانعي السياسات.