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Gingival Health of Internally Displaced Children living in Baghdad Camps

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ABSTRACT

Background: *The internally displaced children (IDC) are vulnerable groups who have less access to dental services, worse oral health, and bear the inappropriate burden of oral diseases. The inaccessibility of prevention and treatment services directly impact the treatment options and costs. This study was conducted on a group of internally displaced children living in Baghdad governorate camps to measure their gingival health status through assessing the effect of displacement conditions on gingival health.* ***Patients and methods:*** *Samples of 1393 children were selected, 567 were internally displaced children from camps in Baghdad governorate and 826 were school children. Oral health education and questionnaire were conducted, and then oral examination was performed using WHO 2013 criteria. The gingival health was evaluated by CPI probe.* ***Results:*** *Gingival bleeding prevalence (score 1) for IDC was found to be 60.8% which is significantly higher in comparison to school children (33.4%). Boys had a higher prevalence of gingival bleeding than girls for both groups, and more prevalent in IDC than school children in all parent's levels of education with statistical significance for both parents. Self-assessment of children towards their gingival health was significantly associated with both the groups of children.* ***Conclusion:*** *This survey highlighted the need for internally displaced children and those with low socioeconomic status, dental health education programs and preventive measures and give information for monitoring the gingival health which is helpful for performing the health service programs.*

Keywords: Gingival health, Internally displaced children, CPI, Parents educational level

INTRODUCTION

The internally displaced children are vulnerable groups who have less access to dental services, worse oral health, and bear the inappropriate burden of oral diseases. The inaccessibility of prevention and treatment services directly impacts the treatment options and costs, as diseases of the mouth are increasing progressively.

The inaccessibility of prevention and treatment services directly impacts the treatment options and costs [1]. Periodontal disease may have its origins in childhood and may progress to periodontitis resulting in the loss of primary and permanent teeth. Studies confirm a high prevalence of gingival inflammation in children, therefore, promptly diagnosing and treating gingival diseases in childhood may reduce the risk of carrying forward the disease in adulthood [2]. Gingiva of children is different in many aspects. The gingiva in primary dentition appears to be more reddish, vascular, and flabby and to lack stippling [3,4]. Epidemiological studies indicate that gingivitis of varying severity is nearly a universal finding in children and adolescents. The shorter lifespan of the primary dentition may be caused as little attention is given to periodontitis in children [5]. Chronic gingivitis in children inflammation is limited to the marginal gingiva with undetectable loss of bone or connective tissue attachment. The primary cause is dental plaque related to poor oral hygiene. Clinically it appears red linear inflammation, increased vascularity, swelling, and hyperplasia. However, bleeding and increased pocket depth are seen less frequently in children than in adults, but may be found in severe gingival hypertrophy or hyperplasia [1,6]. Gingivitis is prevalent among children particularly socially disadvantaged populations. It is likely that the widely observed relation between socioeconomic status levels and gingival health is a function of better oral hygiene among the better educated and a greater frequency of dental visits among the more dentally aware [7,8]. Many Iraqi studies found that the prevalence of gingivitis among children was very high (98-99.5%) [9-11]. This study was conducted on a group of internally displaced children (IDC) living

in Baghdad governorate camps to measure their gingival health status through assessing the effect of displacement conditions on gingival health.

PATIENTS AND METHODS

The IDPs camps were scattered in an urban and peri-urban area of Baghdad. Total 8 camps were selected from these areas. The study group which consisted of internally displaced children (IDC) was randomly selected. Control groups were children selected from schools near the camps matched with age and gender. The sample consists of 1520 children and 127 of the total sample were excluded due to unmet required criteria and lack of some data. Hence the final total sample was 1393 which include 567 (40.7%) internally displaced child and 826 (59.3%) school children (SC). The 567 were divided into 289 girls and 278 boys. In the age group 5-12 years, the girls in the study sample were 422 and the boys were 404 in number. The age group 5-12 years were divided into 2 age groups 5-8 years and 9-12 years. For the IDC, the examination was carried out in the medical service caravan or full caravan inside the camps. In the schools, the children were seated on a desk during the oral examination. Both IDC and school children were examined under daylight. The study received approval from the Research Ethics Committee of the College of Dentistry, University of Baghdad, Iraq.

The children were interviewed by the researcher and the questions consisted of socio-demographic, behavioral and level of parent's education. Oral health education and questionnaire were conducted; the questions concerning behavioral aspect were about the frequency of tooth cleaning and using aids for oral hygiene and self-assessment for gingival health. Oral examination was performed according to WHO (2013), the Community Periodontal Index (CPI) was performed by assessment of gingival health through gingival examination of all teeth present in the mouth by inserting the tip of the WHO CPI probe carefully between the gingiva and the tooth and the absence or presence of bleeding response was assessed. The probe tip was inserted gently into the gingival sulcus and the full extent of the sulcus:

0=Absence of bleeding

1=Presence of bleeding

The gingival health status of the individuals was reported by giving the number and percentage of individuals who had no bleeding on probing (score 0) and bleeding on probing (score 1). A pilot study was done on 20 children, inter-calibration between the two researchers were analyzed by Kappa (0.828). The statistical data analysis was approached by using statistical package (SPSS) version 23.0 in order to analyze and assess the results of this study through the application of the Contingency Coefficients (C.C.) test: estimating the association table for finding cause's relationship.

RESULTS

The results of the study are demonstrated in the following tables and figures. Table 1 showed the comparison between IDC and school children according to gingival bleeding score. Gingival bleeding (CPI score 1) of IDC was found in 60.8% which is significantly higher than that of school children (33.4%).

Table 1 Distribution of children according to gingival health

Children	CPI (N (%))		Total	C.S*
	0	1		
IDC	222 (39.2%)	345 (60.8%)	567 (100.0%)	C.C=0.262
SC	550 (66.6%)	276 (33.4%)	826 (100.0%)	p=0.000 (HS)

Young children had a lower prevalence of gingival bleeding (53.2%) than the older children (67.8%) for IDC and with no significance for school children. This difference was highly significant for IDC but not significant for school children (Table 2).

Table 2 Distribution of the children according to gingival health by age groups

Children	CPI	Age Group (N (%))		Total	C.S* p-value
		5-8 years	9-12 years		
IDC	0	126 (46.8%)	96 (32.2%)	222 (39.2%)	C.C=0.148
	1	143 (53.2%)	202 (67.8%)	345 (60.8%)	p=0.000
Total		269 (100.0%)	298 (100.0%)	567 (100.0%)	HS
SC	0	279 (68.9%)	271 (64.4%)	550 (66.6%)	C.C= 0.48
	1	126 (31.1%)	150 (35.6%)	276 (33.4%)	p=0.169
Total		405 (100.0%)	421 (100.0%)	826 (100.0%)	NS
*HS: Highly significant at p<0.01; NS: Not significant at p>0.05; based on a contingency coefficient (C.C) tests					

Boys had a higher prevalence of gingival bleeding than girls for both groups. But, this difference was non-significant for IDC and school children (Table 3).

Table 3 Distribution of the children according to gingival health by gender

Children	CPI	Gender		Total	C.S*
		Boys	Girls		
IDC	0	100 (36.0%)	122 (42.2%)	222 (39.2%)	C.C=0.064
	1	178 (64.0%)	167 (57.8%)	345 (60.8%)	p=0.128
Total		278 (100.0%)	289 (100.0%)	567 (100.0%)	NS
SC	0	266 (65.8%)	284 (67.3%)	550 (66.6%)	C.C=0.015
	1	138 (34.2%)	138 (32.7%)	276 (33.4%)	p=0.657
Total		404 (100.0%)	422 (100.0%)	826 (100.0%)	NS
NS: Not significant at p>0.05; based on a contingency coefficient (C.C) tests					

Gingival bleeding was more prevalent in IDC than school children in all parent's levels of education except in children without mothers (Figures 1 and 2). These differences were statistically significant for both mothers (C.C=0.184, p<0.01) and fathers (C.C=0.160, p<0.01).

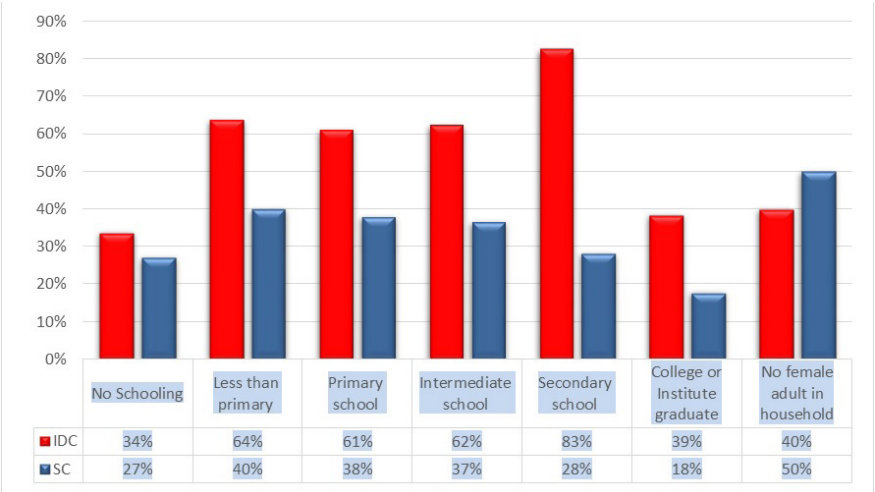

Figure 1 Percentage of children with gingivitis distributed according to the level of the mother's educational level

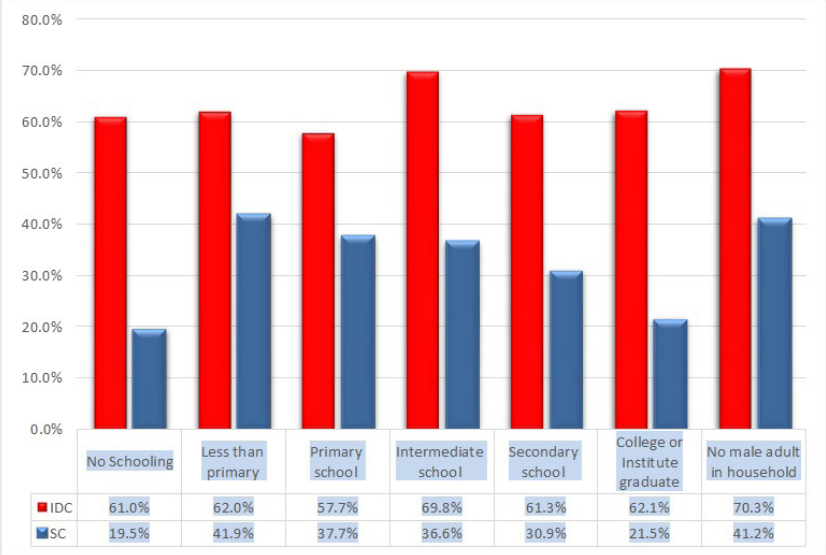

Figure 2 Percentage of children with gingivitis distributed according to the level of the father's educational level

Table 4 demonstrates the prevalence of gingival bleeding according to the duration of living in the camps which were almost the same and had no statistically significant association.

Table 4 Distribution of the IDC according to the duration of living in camps

CPI	Camp duration			Total	C.S*
	1-12	13-24	25+		
0	92 (40.2%)	86 (37.2%)	44 (41.1%)	222 (39.2%)	C.C.=0.33
1	137 (59.8%)	145 (62.8%)	63 (58.9%)	345 (60.8%)	p=0.729
Total	229 (100.0%)	231 (100.0%)	107 (100.0%)	567 (100.0%)	NS
NS: Not significant at p>0.05; based on a contingency coefficient (C.C) tests					

However, children living in tents had a higher prevalence (70.7%) than those of caravans (54.8%) as shown in Table 5. The mean of a number of teeth with gingival bleeding was 2.73 ± 4.18.

Table 5 Distribution of the IDC according to gingival health and camp type

CPI	Camp Type		Total	C.S*
	Tent	Caravan		
0	63 (29.3%)	159 (45.2%)	222 (39.2%)	C.C=0.156
1	152 (70.7%)	193 (54.8%)	345 (60.8%)	p=0.000
Total	215 (100.0%)	352 (100.0%)	567 (100.0%)	HS
HS: Highly Significant at p<0.001; based on a contingency coefficient (C.C) tests				

Self-assessment of children towards their gingival health was evaluated in Table 6 and there was a statistically significant association between the groups and children with healthy gingiva and with bleeding for both IDC and SC.

Table 6 Gingival Health in relation to self-assessment among internally displaced children and school children

Children	Self-Assessment	Gingival Health						C.S*
		0		1		Total		
		N	%	N	%	N	%	
IDC	2	22	10.0%	8	2.3%	30	5.3%	C.C=0.154 P=0.010 HS
	3	117	52.9%	132	38.5%	249	44.1%	
	4	73	33.0%	170	49.6%	243	43.1%	
	5	9	4.1%	33	9.6%	42	7.4%	
	Total	221	100.0%	343	100.0%	564	100.0%	

SC	1	8	1.5%	2	0.7%	10	1.2%	C.C.=0.242 P=0.001 HS
	2	31	5.7%	12	4.4%	43	5.3%	
	3	299	54.9%	138	50.5%	437	53.4%	
	4	174	31.9%	80	29.3%	254	31.1%	
	5	32	5.9%	41	15.0%	73	8.9%	
	Total	545	100.0%	273	100.0%	818	100.0%	
HS: Highly Significant at p<0.001; based on a contingency coefficient (C.C) tests								

Oral hygiene practice was demonstrated by the frequency of tooth brushing found to be with a significant difference for both IDC and SC (Table 7).

Table 7 Brushing frequency in relation to gingival health among internally displaced children and school children

Children	Brushing frequency	Gingival Health						C.S*
		0		1		Total		
		N	%	N	%	N	%	
IDC	Does not brush	79	35.0%	166	47.7%	245	43.2%	C.C=0.162 p=0.010 S
	Occasionally	75	33.9%	108	31.4%	183	32.4%	
	Once a week	12	5.4%	12	3.5%	24	4.2%	
	Every few days	29	13.0%	44	13.0%	73	12.9%	
	Every day	22	10.0%	13	4.0%	35	6.2%	
	≥2 times a day	4	2.0%	3	1.0%	7	1.2%	
	Total	221	100.0%	346	100.0%	567	100.0%	
	Does not brush	150	27.3%	89	32.4%	239	29.0%	C.C=0.139 p=0.012 S
	Occasionally	183	33.4%	113	41.1%	289	36.1%	
	Once a week	22	4.0%	10	3.6%	32	3.9%	
	Every few days	106	19.3%	33	12.0%	139	16.9%	
	Every day	75	13.7%	29	10.5%	104	12.6%	
	≥2 times a day	13	2.4%	1	0.4%	14	1.7%	
	Total	549	100.0%	275	100.0%	826	100.0%	
S: Significant at p<0.05; based on a contingency coefficient (C.C) tests								

DISCUSSION

The prevalence of bleeding gingiva was 60.8% of IDC and for SC 33.4% with a significant difference. This is less than other Iraqi studies on same age group which was ranged from 98.35%-100%, this difference was due to the differences in indices used [9-14]. The gingival index measures the slight changes in gingiva to the spontaneous bleeding while for the WHO, 2013, depending on presence or absence of bleeding gingiva, thus in comparison with other studies depending on same criteria of gingival bleeding this study was recorded more than other studies on refugee newly arrived 20.5% and in agreement with studies revealed that socio-economic status and displacement circumstances had greatly affected the oral health condition [15,16]. IDC with the poor living situation and lack of sanitary and scares water supply were influencing the oral hygiene and in its turn the gingival health.

There was a significant difference between age groups concerning gingival health, the prevalence of gingivitis increased with age for both IDC and SC [17]. The boys had a greater prevalence of gingivitis than girls which is in agreement with other studies [5,9,18-21], which is probably related with the levels of oral hygiene, the girls care about their oral hygiene more than boys, other studies showed no significant difference between them [10,22].

The socioeconomic status demonstrated by parents' educational level reveal that increasing gingivitis with increasing level of education for IDC in opposite to SC whom gingival inflammation decreased with increasing level of education and disagree with Iraqi studies found that gingival bleeding had inverse relation to parents` educational level [18,23], also many studies done on oral hygiene literacy of parents and its relation with oral hygiene of their children, oral health literacy defined as the "degree to which individuals have the capacity to obtain, process and understand basic oral health information and services needed to make appropriate health decisions," they found that oral health literacy is increased with increasing parent's educational level [24,25]. These contradictory results of IDC may be explained by the higher number of parents with the low educational level in comparison to a number of parents with higher education which lead to these conflicting results.

The internally displaced children with low socio-economical level and parent's educational level experienced poor oral hygiene [26]. Periodontal diseases increased due to low socio-economic status; less toothbrush and less dental visit. Gingival bleeding 52.6% plaque and calculus accumulation were almost in 65.8% of children which coincides with the fact of low brushing frequency in those children [27].

The duration of displacement seems to be with no significant effect on gingival health while the type of camp had a significant effect on it; children living in tents tend to have more gingivitis than who lived in caravans; this may be due to the accessibility of water supply and bathrooms between two camps. The caravans are supplied with water and bathrooms while the tents population sharing a communal water supply and bathrooms [28-30].

Perception of children towards gingival health was with significant difference pointing that children were aware of the problem but do not have the solution [31], it's in agreement to study done by Conrado, et al., who found that patients referred for periodontal treatment had a low degree of awareness of their periodontal conditions and treatment needs [32].

Tooth brushing with gingival health had a significant difference, children who do not brush their teeth had gingival bleeding which is in agreement with other studies [33,34].

CONCLUSION

Due to scarce resources health care within the internally displaced children who have poor health, it is important to adopt preventive strategies depending on few resources. This survey highlighted the need for internally displaced children and those with low socioeconomic status, dental health education programs and preventive measures and give information for monitoring the gingival health which is helpful for policymakers.

DECLARATIONS

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Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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