Oral health status in Najaf City

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ABSTRACT

Background: This study assessed the oral hygiene status of teenagers.

Materials and methods: Three hundred and two teenagers aged 13-16 years (151 boys and 151 girls) and 291 young adults aged 20-23 years (150 males and 141 females) collected from secondary schools and the University of Kufa in Najaf city. Oral hygiene was assessed by three indices (plaque, gingival and calculus indices).

Results: Plaque free subjects represented 22.3% of males and 44.2% of females with a mean PI of 0.717±0.742 for males and 0.444±0.619 for females. While, gingivitis was found in 68.1% of males and 46.6% of females with a mean GI of 0.436±0.526 for males and 0.255±0.447 for females. The majority of the sample was calculus free (91.1% of females and 88.7% of males) with a mean CI of 0.020±0.081 for males and 0.014±0.056 for females.

Conclusion: Males showed significantly higher mean PI, GI and CI scores than females. Teenagers were found to have significantly higher mean PI and GI than young adults. This indicates that young adults are keener on keeping a good oral hygiene than teenagers and that males neglect their oral hygiene more than females.

Keywords: oral health status, community. (J Bagh Coll Dentistry 2011; 23(sp. issue):162-166).

INTRODUCTION

Dental plaque is a soft, non-mineralized, bacterial deposit which forms on teeth that are not adequately cleaned [1], and it can be clinically recognized when it reaches certain thickness as a whitish or yellowish layer primarily along the gingival margin [2]. A positive association was demonstrated between a decreased level of oral cleanliness and increasing severity of gingivitis, which in time and without treatment would progress without remission to periodontitis [3-5]. Epidemiological, clinical and experimental studies revealed that low plaque index scores to be usually associated with a low gingival index [1, 7-10].

Gingivitis is defined as an inflammatory lesion confined to the tissues of marginal gingiva. Plaque associated gingivitis is considered as the most prevalent type of gingivitis and counting for more cases than other forms combined (Page, 1986). Gingivitis increases in prevalence and severity with increasing age to reach a peak prevalence of 90-100% at puberty [11].

Mineralization within plaque results in calculus formation which consists of inorganic and organic components. More than 100 WHO surveys throughout the world using CPITN in adolescents (15-19 years) showed that most common condition was calculus with or without gingival bleeding (score 2) which was more prevalent in non- industrialized countries than in industrialized countries. [12]

Periodontal disease, once established, is often time- consuming and costly to treat. Calculus itself is not causative of periodontal disease, but is always covered by plaque and retains toxic bacterial products. Gingivitis, which always precedes periodontitis, is widely prevalent in children.1 Dentists often fail to evaluate or to take seriously early inflammatory, gingival changes. Because gingivitis is considered such a commonly occurring entity, dentists feel no need to inform their patients about its presence [13].

The aim of the study is to provide a baseline data on Najaf population regarding the recordings of plaque, gingival and calculus indices which will help in comparing with recordings from other cities in Iraq and world wide comparison, and also assist in future estimation on the dental needs and demands in this city.

MATERIALS AND METHODS

This study was conducted in March 2010, in Najaf City. Data was collected for about three weeks from children in the third grade at the age of 13-16 years in several secondary schools which were selected randomly from different areas of the city (three schools for boys and three for girls), and from college students at the age of 20-23 years in several colleges from the University of Kufa in Najaf city.

Diagnosis was principally based on clinical inspection and probing, under standardized condition using plane mouth mirrors and sharp right angle dental explorers under a good natural light.

Recording of oral hygiene was by registration of three indices based on Loe and Silness [14] where four surfaces (distal, labial or buccal, mesial and lingual) of six teeth (16, 21, 24, 36, 41 and 44) were examined and scored from 0 to 3.

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The scores of the four surfaces are added and divided by four to give the index of each tooth. Then the scores of the teeth are added and divided by the number of teeth to give the index score for the individual.

1- Plaque index (PI): it assesses the thickness of plaque at the cervical margin of the tooth with the following criteria:

 0 No plaque

 1 A film of plaque adhering to the free gingival margin and adjacent area of the tooth.

 2 Moderate accumulation of soft deposits within the gingival pocket, or the tooth and gingival margin which can be seen with the naked eye.

 3 Abundance of soft matter with in the gingival pocket and/or on the tooth and gingival margin.

2- Gingival index (GI): it assesses the severity of gingivitis based on color, consistency and bleeding on probing. A probe is used to run along the soft tissue wall adjacent to the entrance to the gingival sulcus and the bleeding potential is based on the following criteria:

 0 Normal gingiva

 1 Mild inflammation: slight change in color, slight edema, and no bleeding on probing.

 2 Moderate inflammation: redness, edema, glazing and bleeding on probing.

 3 Severe inflammation: marked redness and edema, ulceration and tendency for spontaneous bleeding

3- Calculus index (CI): It assesses the presence of hard deposits on the tooth surfaces according to the following criteria:

 0 None

 1 Supragingival calculus, extending only slightly below the free gingival margin (not more than 1mm).

 2 Moderate amount of supra- and sub-gingival calculus or subgingival calculus alone.

 3 An abundance of supra- and subgingival calculus [15].

Statistical Analysis

Data processing and analysis were conducted by the application of the SPSS package version 18. Student's t-test was applied to measure the difference between means of two groups in examining gender difference and age difference. P values higher than 0.05 were regarded as statistically non-significant.

RESULTS

The total number of children involved in the study was 302 aged 13-16 years (151 boys and 151 girls) and another 291 young adults aged 20-23 years (150 males and 141 females).

Table 1 and figure 1 illustrate the distribution of the sample according to the PI score with the mean values and standard deviation of the two age groups. Plaque free subjects represented 22.3% of males and 44.2% of females with a mean PI of 0.717±0.742 for males and 0.444±0.619 for females.

Table 2 and figure 1 illustrate the distribution of the sample according to the GI score with the mean values and standard deviation of the two age groups. Gingivitis was found in 68.1% of males and 46.6% of females with a mean GI of 0.436±0.526 for males and 0.255±0.447 for females.

Table 2 and figure 1 illustrate the distribution of the sample according to the GI score with the mean values and standard deviation of the two age groups. The majority of the sample was calculus free (91.1% of females and 88.7% of males) with a mean CI of 0.020±0.081 for males and 0.014±0.056 for females.

Table 1: Distribution of the sample according to PI score with mean and standard deviation of the PI score.
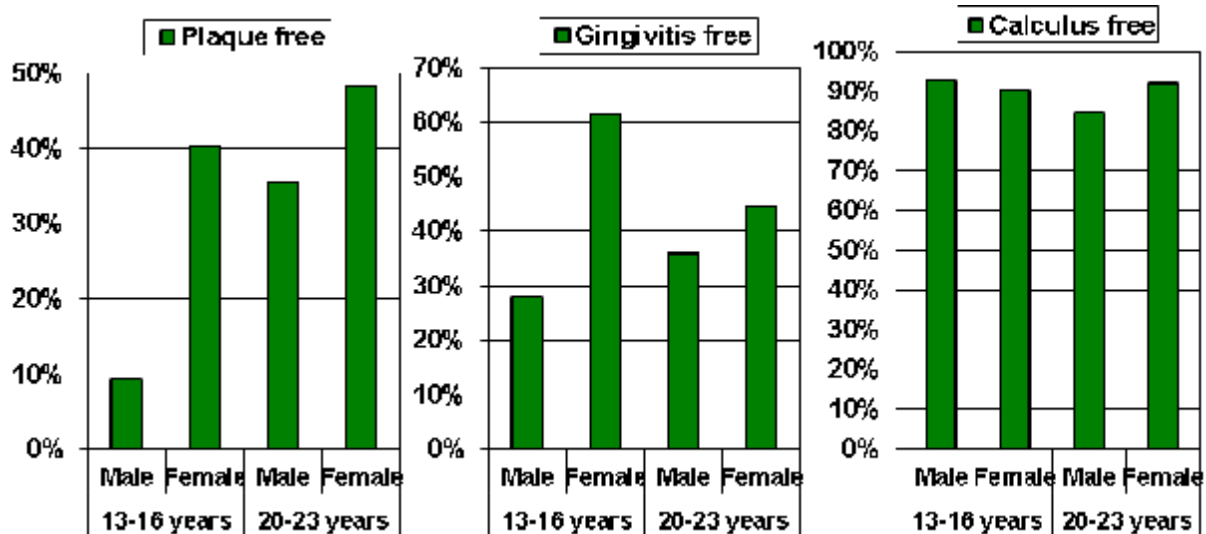
PI	13-16 years				20-23 years				Total			
	Males		Females		Males		Females		Males		Females	
	N	%	N	%	N	%	N	%	N	%	N	%
0	14	9.3%	61	40.4%	53	35.3%	68	48.2%	67	22.3%	129	44.2%
0.001-1.000	55	36.4%	49	32.5%	97	64.7%	73	51.8%	152	50.5%	122	41.8%
1.001-2.000	72	47.7%	40	26.5%	0	0.0%	0	0.0%	72	23.9%	40	13.7%
>2.000	10	6.6%	1	0.7%	0	0.0%	0	0.0%	10	3.3%	1	0.3%
Total	151	100.0%	151	100.0%	150	100.0%	141	100.0%	301	100.0%	292	100.0%
Mean	1.287		0.767		0.144		0.098		0.717		0.444	
SD	0.643		0.710		0.182		0.155		0.742		0.619	

Table 2: Distribution of the sample according to GI score with mean and standard deviation of the GI score.

GI	13-16 years				20-23 years				Total			
	Males		Females		Males		Females		Males		Females	
	N	%	N	%	N	%	N	%	N	%	N	%
0	42	27.8%	93	61.6%	54	36.0%	63	44.7%	96	31.9%	156	53.4%
0.001-1.000	86	57.0%	44	29.1%	96	64.0%	78	55.3%	182	60.5%	122	41.8%
1.001-2.000	22	14.6%	14	9.3%	0	0.0%	0	0.0%	22	7.3%	14	4.8%
>2.000	1	0.7%	0	0.0%	0	0.0%	0	0.0%	1	0.3%	0	0.0%
Total	151	100.0%	151	100.0%	150	100.0%	141	100.0%	301	100.0%	292	100.0%
Mean	0.745		0.404		0.125		0.095		0.436		0.255	
SD	0.580		0.569		0.158		0.134		0.526		0.447	

Table 3: Distribution of the sample according to CI score with mean and standard deviation of the CI score.

CI	13-16 years				20-23 years				Total			
	Males		Females		Males		Females		Males		Females	
	N	%	N	%	N	%	N	%	N	%	N	%
0	140	92.7%	136	90.1%	127	84.7%	130	92.2%	267	88.7%	266	91.1%
0.001-1.000	11	7.3%	15	9.9%	23	15.3%	11	7.8%	34	11.3%	26	8.9%
1.001-2.000	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
>2.000	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	151	100.0%	151	100.0%	150	100.0%	141	100.0%	301	100.0%	292	100.0%
Mean	0.017		0.021		0.023		0.008		0.020		0.014	
SD	0.080		0.069		0.082		0.037		0.081		0.056	

Figure 1: Distribution of the sample according to the presence and absence of calculus (%).
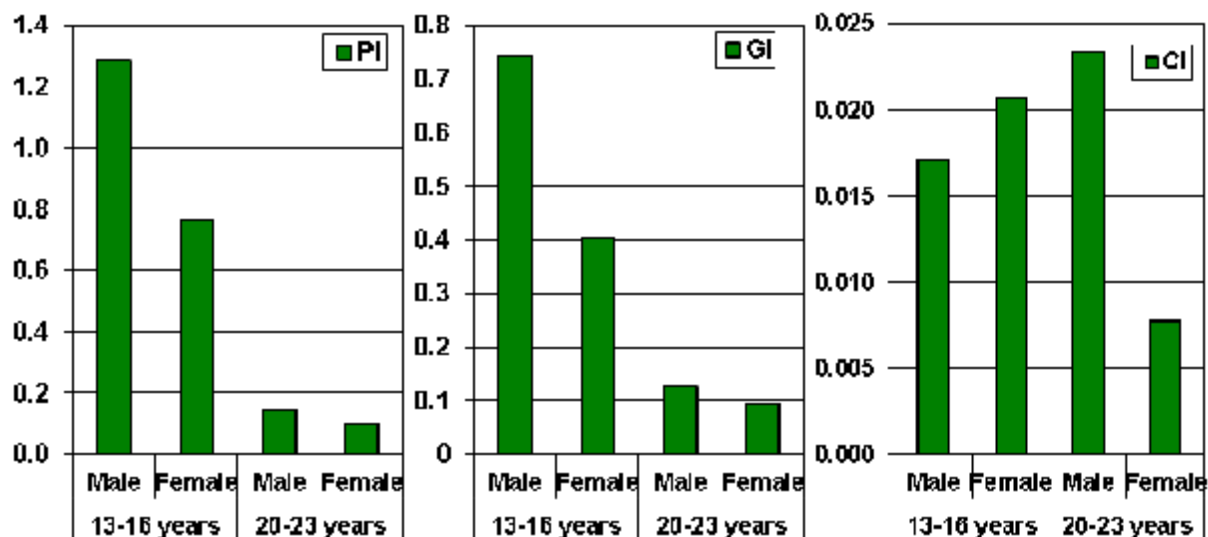
Figure 2: Mean PI, GI and CI of 13-16 and 20-23 year olds.

Table 4: Gender difference for all the measured variables.

	Gender difference											
	13-16 years				20-23 years				Total			
	T	d.f.	p	Sig.	t	d.f.	P	Sig.	T	d.f.	p	Sig.
PI	6.667	300	0.000	*	2.329	289	0.021	*	3.361	591	0.001	*
GI	5.146	300	0.000	*	1.747	289	0.082	NS	2.517	591	0.012	NS
CI	-0.420	300	0.675	NS	2.066	289	0.040	*	2.073	591	0.039	*

Table 5: Age difference for all the measured variables.

	Age difference											
	Males				Females				Total			
	T	d.f.	p	Sig.	t	d.f.	p	Sig.	T	d.f.	p	Sig.
PI	-6.058	299	0.000	***	-5.147	290	0.000	***	-7.928	591	0.000	***
GI	-7.238	299	0.000	***	-7.058	290	0.000	***	-10.070	591	0.000	***
CI	-3.370	299	0.001	***	-2.250	290	0.025	*	-3.999	591	0.000	***

Males showed significantly higher mean PI scores than females for both age groups. Males also displayed higher mean GI scores than females but this was only statistically significant in 13-16 year olds and not for 20-23 year olds. Moreover, 13-16 years olds showed non-significant mean calculus index score gender difference while for the 20-23 years old group males significantly showed higher mean calculus index scores than females (Table 4).
Regarding age difference, 13-16 year olds were found to have statistically significantly higher mean PI, GI and CI scores than 20-23 year olds for males, females and total sample (Table 5).

DISCUSSION

In this study, 57.5% of the sample had gingivitis, being 55.3% for teenagers and 59.7% for young adults in Najaf City. This is remarkably lower than the prevalence of gingivitis (99.7%) reported by Al-Sayyab [10] among 1450 students (15 year olds) from the central region of Iraq. This reflects the change of the society towards better oral hygiene measures during the past three decades.

Ten percent of the sample had calculus, being 8.6% for teenagers and 11.7% for young adults in Najaf City. This is remarkably lower than the 52.6% in Syrians [16], 57% in Lebanon [16], 35% in Jordan [17].

Teenage males demonstrated the least percentage of plaque free subjects and hence had the highest mean PI score (Figure 1 and 2). On the other side, adult males and females showed a high percentage of plaque free subjects giving the lowest mean PI score. However, female teenagers also had a high percentage of plaque free subjects but had relatively moderate mean PI score. This is because the non-plaque-free teenager females had