Oral health status among fifteen years-old students in Maysan governorate\Iraq

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ABSTRACT

Background: Dental caries and periodontal disease are the most common and widely spread diseases affecting humans at different ages. Aim of this study is the assessment of prevalence and severity of dental caries, gingivitis, oral hygiene and enamel anomalies in relation to gender and residency among 15 years old students in Maysan governorate –Iraq.

Materials and methods: The total sample composed of 750 students (400 males and 350 females, 450 urban and 300 rural) selected randomly from different high schools in the Governorate. Diagnoses and recording dental caries was according to the criteria of WHO (1987), Plaque index of Silness and Loe (1964) was used for plaque assessment, Ramfjord index (1959) was applied for the assessment of calculus, gingival index of Loe and Silness (1963) was followed for recording gingival health condition and criteria of WHO (1997) to assess enamel anomalies.

Results: Caries prevalence was found to be (92.53%) of the total sample. The DMFS value was higher among females compared to males with statistically high significant difference (P<0.01) also the value was higher among rural compared to urban with statistically high significant difference (P<0.01). Plaque, gingival and calculus indices were higher among rural than urban and higher among males than females, statistically, there were high significant differences regarding plaque and gingival indices (P<0.01) while non-significant difference regarding calculus index (P>0.05), for both genders and residencies.

Conclusion: A high prevalence of dental caries and gingivitis were recorded indicating the need of a public health programs in this governorate.

Keywords: Dental caries, oral hygiene, Gingivitis, Maysan Governorate. (J Bagh Coll Dentistry 2014; 26(4):147-151).

الخلاصة

الخلفية: تسوس الاسنان ومرض ما حول السن الاكثر شيوعا والاوسع انتشارا التي تؤثر على الانسان في مختلف الاعمار. هدف هذه الدراسة لتقييم انتشار وشدة تسوس الاسنان,التهاب اللثه, نظافة الفم وعيوب المينا بالنسبة الى الجنس والاقامة بين الطلاب بعمر 15 سنة في محافظة ميسان-العراق.

المواد والطرق: تتكون العينة الكلية من 750 طالب (400 ذكور و 350 اناث,450 حضر و 300 ريف) اختيرت عشوائيا من مدارس ثانوية مختلفة في المحافظة. تشخيص وتسجيل تسوس الاسنان كان حسب معاييرمنظمة الصحة العالمية (1987), دليل الصفيحة الجرثومية لسلنس ولو (1964) استخدم لقياس الصفيحة الجرثومية, دليل رامفورد (1959) طبق لتقييم القلح, دليل اللثة للو و سلنس (1963) اتبع لتسجيل حالة اللثة الصحية و معايير منظمة الصحة العالمية (1997) لتقييم عيوب المينا.

النتائج: وجد ان انتشار تسوس الاسنان (92.53) من العينة الكلية. قيمة تسوس اسطح السن (DMFS) كانت اعلى بين الاناث بالمقارنة بالذكور مع اختلاف معنوي كبير احصائيا (P<0.01) ايضا القيمة كانت اعلى بين الريف بالمقارنة مع الحضر مع اختلاف معنوي كبير احصائيا (P<0.01). مقاييس الصفيحة الجرثومية, اللثة و القلح كانت اعلى بين الذكور من الاناث واعلى بين الريف من الحضر, احصائيا, توجد اختلافات معنوية كبيرة بخصوص مقاييس الصفيحة الجرثومية واللثة (P<0.01) بينما لا يوجد اختلاف معنوي بخصوص مقياس القلح (P>0.05) لكل من الجنس ومكان الاقامة.

الخاتمة: نسبة انتشار عالية لتسوس الاسنان والتهاب اللثة التي سجلت تحدد الحاجة الى برامج صحة عامة في هذه المحافظة.

الكلمات الدليلية: تسوس الاسنان, نظافة الفم, التهاب اللثة, محافظة ميسان.

INTRODUCTION

Dental caries continues to be one of the most common infectious disease known to man, despite widespread preventive measure, this disease exerts a social, physical, mental and financial burden on a global scale especially in developing countries [(1,2)]. The disease is a chronic irreversible progressive in nature, untreated lesions may progress to cause pain, infection and discomfort to the subject, and finally it might end with the loss of the tooth [(3)].Gingivitis and periodontitis are the two major forms of inflammatory diseases affecting the periodontium but the most common type of periodontal disease that can be seen in children is gingivitis which is a reversible condition may start early in life and increase in severity with advancing age [(4,5)]. However, gingivitis if not treated may progress later to periodontitis and if this progress, it may end with loss of teeth [(6)].

Enamel anomalies is a disturbances in hard tissue matrices and in their mineralization during odontogenesis that clinically appeared in three forms; demarcated opacities, diffuse opacities and hypoplasia that results in many problems as esthetic, occlusal, dental sensitivity and predisposing factor for dental caries [(7)].

There were many epidemiological studies concerning oral health status in different location of Iraq [(8-10)]. As there were no previous epidemiological studies concerning oral health of people in Maysan Governorate, therefore this study was designed. The aim of this study included the investigation of the prevalence and severity of dental caries, gingivitis, dental plaque, dental calculus and enamel anomalies in relation to area of residency and gender.

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MATERIALS AND METHODS

This oral health survey was conducted among high school students during the period between the middle of January (2013) till the end of April (2013) in Maysan Governorate, Iraq.

In this study the sample consist of (750) 15 years old school students, the school were randomly selected, they were distributed in different geographical location in Maysan Governorate. Adolescents who look healthy and without any medical disease were examined only.

Diagnosis and recording of dental caries was assessed according to the criteria described by WHO [11]. Plaque index of Silness and Loe [12] was used for plaque assessment, Ramfjord index [13] was applied for the assessment of calculus, gingival index of Loe and Silness [14] was followed for recording gingival health condition and Enamel anomalies index of WHO [7] to assess enamel anomalies.

RESULTS

Table (1) demonstrates the distribution of total sample by gender and area of residency. Results showed that the prevalence of dental caries was (92.53%) for the total sample; (89.25%) males and (96.28%) females with no significant difference (P>0.05), (90.0%) urban and (96.33%) rural with highly significant difference (P<0.01), Table (2). As showed in Table (3) the DMFS and its components (DS, MS, FS). Dental caries was found to be higher in females compared to males, difference was found to be statistically highly significant (P<0.01), also dental caries was higher in rural than that in urban with high significant difference (P<0.01). The decayed surfaces (DS) were found to contribute the major part of DMFS value, while the filled surfaces (FS) were the less value.

Table (4, 5 and 6) showed plaque, calculus and gingival indices respectively, mean value of plaque index was (1.03±0.01), calculus index (0.03±0.01) and gingival index (0.88±0.01). Concerning plaque and gingival indices, a high significant differences were reported within categories of residency (urban, rural) and gender (P<0.01), while no significant difference was reported with calculus index for both categories (gender and residency) (P>0.05).

Prevalence of enamel anomalies was (19%) of total sample; the most prevalent type was diffuse opacities (10%) while the lowest was hypoplasia (1.5%) as showed in figure (1). Table (7) shows no significant correlation between urban and rural or male and female students (P>0.05).

Table 1: Distribution of total sample by residency and gender

Area of Residency	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Males	217	28.93	183	24.4	400	53.33
Females	233	31.07	117	15.6	350	46.67
Total	450	60.0	300	40.0	750	100

Table 2: Prevalence of dental caries among students by residency and gender.

Area of Residency	Males		Females		Total		Chi-square
	No.	%	No.	%	No.	%	
Urban	185	41.11	220	48.89	405	90.00	** 0.00
Rural	172	57.33	117	39.00	289	96.33	
Total	357	89.25	337	96.28	694	92.53	
Chi-square	(NS)						

**** Highly significant, P<0.01.**

Table 3: Caries experience (DMFS) among students by residency and gender

Residency	Gender	DS		MS		FS		DMFS		t-test	
		Mean	±S.E.	Mean	±S.E.	Mean	±S.E.	Mean	±S.E.		
Urban	Males	7.88	0.45	0.76	0.15	0.11	0.05	8.76	0.55	** 0.00	** 0.00
	Females	11.95	0.41	1.41	0.17	0.00	0.00	13.38	0.49		
	Total	9.99	0.32	1.10	0.12	0.06	0.02	11.15	0.38		
Rural	Males	11.73	0.46	0.49	0.14	0.00	0.00	12.22	0.50	** 0.00	
	Females	13.88	0.49	1.88	0.26	0.02	0.01	15.78	0.57		
	Total	12.57	0.34	1.03	0.13	0.01	0.05	13.61	0.39		
Total	Males	9.65	0.34	0.63	0.10	0.06	0.02	10.35	0.38	** 0.00	
	Females	12.60	0.32	1.57	0.01	0.01	0.06	14.18	0.38		
	Total	11.02	0.24	1.07	0.09	0.04	0.01	12.14	0.28		

**** High significant, P < 0.01.**

Table 4: Plaque Index (mean ± S.E.) among students by residency and gender

Area of residency	Gender						t-test
	Males		Females		Total		
	Mean	±S.E.	Mean	±S.E.	Mean	±S.E.	
Urban	1.02	0.02	0.95	0.02	0.98	0.01	0.00**
Rural	1.15	0.02	1.01	0.02	1.09	0.01	
Total	1.08	0.01	0.97	0.01	1.03	0.01	
t-test	0.00**						

**** High significant, P < 0.01.**

Table 5: Calculus Index (mean ± S.E.) among students by residency and gender.

Area of residency	Gender						t-test
	Males		Females		Total		
	Mean	±S.E.	Mean	±S.E.	Mean	±S.E.	
Urban	0.86	0.02	0.81	0.02	0.03	0.01	0.067(NS)
Rural	1.00	0.02	0.86	0.02	0.04	0.02	
Total	0.93	0.01	0.82	0.01	0.03	0.01	
t-test	0.196 (NS)						

(NS)= not significant, P > 0.05

Table 6: Gingival index (mean ± S.E.) among students by residency and gender.

Area of residency	Gender						t-test
	Males		Females		Total		
	Mean	±S.E.	Mean	±S.E.	Mean	±S.E.	
Urban	0.05	0.01	0.01	0.00	0.83	0.01	** 0.00
Rural	0.07	0.00	0.00	0.00	0.95	0.01	
Total	0.06	0.00	0.01	0.00	0.88	0.01	
t-test	0.00**						

**** High significant, P < 0.01.**

Table 7: Number of affected students by enamel anomalies in relation to residency and gender.

Residency	Males		Females		Total		Chi-square
	No.	%	No.	%	No.	%	
Urban	37	8.22	37	8.22	74	16.44	(NS)
Rural	45	15.00	25	8.33	70	23.33	
Total	82	20.50	62	17.71	144	19.20	
Chi-square	(NS)						

(NS) Not significant, P > 0.05

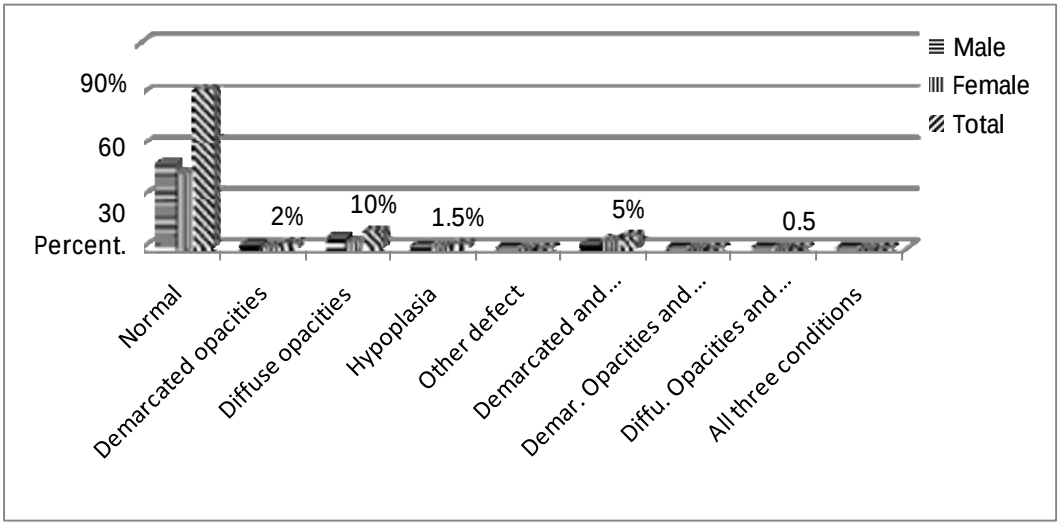

Figure 1: Percentage of total sample according to enamel anomalies types.

DISCUSSION

This study was designed to investigate oral health status of high school students aged 15 years old which was an index age [7]. It was achieved in Maysan governorate because there was no previous epidemiological study concerning this age or any other age group carried out in this governorate so this study's results can be considered as base line data to compare with other studies in the future also produce a reliable baseline data for development of national or regional oral health programs.

In this study the prevalence of dental caries was found to be (92.53%). This was higher than that reported by others [9, 10, 15]. It is well known that systemic fluoridation can widely reduce the prevalence and severity of dental caries [18]. The concentration of fluoride in communal water supply in different governorates in Iraq is ranging from 0.12- 0.22 ppm [8] this level is far beyond the optimal level recommended for maximum of dental caries (0.7- 1.2) [16]. This may give some explanation to the high prevalence of dental caries reported in this study. The result of DMFS was (12.14± 0.28) which was higher than that reported by other in different parts of the world [17]. In general variation in caries experience between this study and other Iraqi studies may be partially attributed to variation in dietary habits, oral hygiene measures as well as dental health services between governorates; however this may need further studies to confirm this observation. This study showed that the decayed (DS) was the major component of DMFS index; this result was in agreement with other studies [9, 10, 18, 19] and may reveal the poor demand for dental treatment. In comparison between filled and extracted surfaces, MS was greater than FS, this may indicates that even if treatment was present it was directed for extraction rather than preserving teeth.

Findings of this study showed that the mean value of plaque, gingival and calculus indices were lower than that reported by other studies [15, 18] but higher than that reported by another [10, 19] in different parts of Iraq, this may be attributed to variation in oral hygiene measure between governorates.

The prevalence of enamel anomalies in this study was (19%), this result was lower than that reported by other [20]. Males more affected by enamel anomalies than females, this may be partially attributed to inherent males vulnerability to stress, males on stressful environments exhibit higher enamel anomalies than females. Rural students more affected than urban, this may be partially explained by that people in urban area had better nutrition's which play important role in teeth formation [20].

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