

The prevalence of oral and dental developmental anomalies among 14-17 years Iraqi students in Missan governorate

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ABSTRACT

Background: The aim of study was to find out the prevalence of developmental anomalies in teeth and oral hard and soft developmental tissues among a sample of 14-17 years students in Missan Governorate and compare it with the prevalence rates of these anomalies in the central and northern parts of Iraq.

Materials and Method: Oral examination of 3046 students(1506 males and 1540 females) aged 14-17 years were performed in 30 secondary and intermediate schools in Missan Governorate(20 schools in Al-Amara city the capital of Governorate and 10 schools in different provinces).

Results: Oro-dental developmental anomalies seen in 1036 students represents 33.9% of the studied sample, 47.6% males and 52.4% females. There was a significant statistical difference between them. Dental anomalies constituted 78.8%, while oral soft tissues anomalies and oral hard tissues anomalies constituted 19.9% and 1.3% respectively.

Most of oro-dental developmental anomalies were present in 16 years age group in the sample. Environmental diffuse opacity was the most common oro-dental developmental anomalies (5.1%)in studied sample, fissure tongue (4.9%) represents the most common anomaly of tongue and oral soft tissues anomalies in the sample.

Conclusions: The study shows that Missan Governorate has the higher prevalence rate of microdontia than other Iraqi cities which was 4.8%. Maxillary lateral incisor was the most common congenitally missing tooth or to appear small (microdent) and mandibular second primary molar was the most retained primary tooth in the studied sample.

Keywords: Oral anomalies, dental anomalies, oral diseases. (J Bagh Coll Dentistry 2009; 21(4):90-95)

INTRODUCTION

Developmental anomalies of teeth and oral soft and hard tissues are groups of conditions which arise due to disturbances in development and growth that involve these tissues. Some of them develop in utero and these are usually present at birth and persist throughout life. Others may not manifest themselves for many years. Most of these anomalies are congenital (i.e. present at birth) and considerable number of these have genetic basis. The cause appears complex and multifactorial, involving the interaction of genetic and environmental factors. ⁽⁸⁾

Anomalies of the oral and dental structures can be isolated, although they may also be a symptom of a major defect or manifestation of a general disorder or syndrome. About 50% of all chromosomal aberrations and 25% of genetically determined disorders manifest themselves in the craniofacial region. ⁽²⁾

In Iraq, there were many studies recording the prevalence rates of developmental anomalies in its central part (Baghdad city and its surrounding rural areas). ⁽³⁻⁹⁾

Moreover other studies were conducted in northern parts of Iraq, in Mosul city ⁽¹⁰⁾, in Al-Sulimani city ⁽¹¹⁾ and in Halabja city ⁽¹²⁾, whereas no previous studies recording the prevalence of these anomalies in southern parts of Iraq were published.

SUBJECTS AND METHODS

A total of 3046 students (1506 males and 1540 females) aged 14-17 years was examined in 30 secondary and intermediate schools in Missan Governorate (20 schools in Al-Amara city the capital of Governorate and 10 schools in different provinces).The study sample divided into 4 age groups (14 years = 760 students, 15 years = 762students, 16 years = 764 students and 17 years = 760 students) with an equal male: female ratio in each age group.

The clinical examination of the oral and dental anomalies was performed by using sets of instruments consisted of plane mouth mirrors and sharp probes which are kept in a kidney dish containing a sterilizing diluted antiseptic solution. Specially designed chart was used to record the personal data. The students were instructed to rub their teeth by piece of cotton supplied by investigator to get as much clean teeth as possible and to obtain clearly visualized field for examination. The tooth surfaces and hard and soft tissues defect inspected visually by aiding of light

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hand, tooth defective areas explored with a probe to determine the abnormalities.

The clinical examination procedure for detecting the anomalies was done in sequence and according to diagnosis criteria were in accordance with the WHO(1997)⁽¹³⁾.

For every anomaly reported, photograph was captured as permanent record with the case sheet by using of digital camera. Radiographic examination were performed for the students for confirmation of diagnosis in cases of retained deciduous teeth, impacted canine and congenitally missing permanent teeth.

The data were analyzed statistically using Chi-square test for significance. P-value < 0.05 was statistically significant.

RESULTS

The total number of affected students was 1036 students (493 males and 543 females) representing 33.9% of total sample, there was a statistical difference between males and females.

Most of oro-dental developmental anomalies were seen in 16 years age group, while the less affected age group was 14 years, as shown in table 1, also there was a high statistical difference between age groups (P-value <0.001).

The prevalence of different dental developmental anomalies examined in this study is seen in Table 2 concerning the sex and statistical difference. Environmental diffuse opacity was the most common oro-dental

developmental anomaly in this study (5.1%). Microdontia represented (4.8%) which considers the higher prevalence rate among all Iraqi cities. Gemination and dens invaginatus had the lower prevalence in this study (0.03%) for both of them. There was a significant statistical difference between males and females in internal discoloration of teeth (p-value= 0.007).

Table 3 shows the prevalence rate of different oral soft and hard tissues anomalies, fissured tongue showed the higher prevalence (4.9%) among other oral soft tissue anomalies and consider the most common anomaly of the tongue in this study. Geographic tongue had a high significant statistical difference between sexes (P-value <0.001), macroglossia Fordyce granules and lingual varicosities showed a significant statistical difference between males and females .Microglossia had the lower prevalence (0.03%) among soft tissue anomalies. Torus palatinus was the only hard tissues anomaly seen in this study represented (1.3%).

Table 1: Number and percentage of affected students of males and females by age groups

%	Total	Female	Male	Age
17.5 %	182	104	78	14-
27.8 %	289	118	171	15-
30.9 %	321	185	136	16-
23.5 %	244	136	108	17-
100 %	1036	543	493	Total

Table 2: Number, distribution, percentage and statistical difference of Dental anomalies

Dental anomaly	Male	Female	Total	%	Statistical difference
Enamel Hypoplasia	31	31	62	2.04%	N.S
Environmental Localized Opacity	78	74	152	4.9%	N.S
Environmental Diffuse Opacity	79	79	158	5.1%	N.S
Attrition	3	1	4	0.13%	N.S
Retained Deciduous teeth	50	51	101	3.3%	N.S
Impacted Canine	19	25	44	1.4%	N.S
Internal discoloration of teeth	20	7	27	0.89%	Significant P=0.007
Hypodontia(Congenital missing tooth or teeth)	24	26	50	1.6%	N.S
Hyperdontia(supernumerary tooth or teeth)	7	4	11	0.36%	N.S
Microdontia	78	71	149	4.8%	N.S
Talon cusp	4	3	7	0.23%	N.S
Cusp of carabelli	35	31	66	2.1%	N.S
Gemination	1	0	1	0.03%	N.S
Dens invaginatus	1	0	1	0.03%	N.S

Table 3: Number, distribution, percentage and statistical difference of oral soft and hard tissues

Oral anomaly	Male	Female	Total	%	Statistical difference
Cleft lip	2	2	4	0.13%	N.S
Commissural lip pits	3	0	3	0.1%	Significant P=0.047
Fissure tongue	80	71	151	4.9%	N.S
Geographic tongue	30	10	40	1.3%	H.S P<0.001
Macroglossia	2	0	2	0.07%	Significant P=0.049
Microglossia	1	0	1	0.03%	N.S
Lingual Varicosities	3	0	3	0.1%	Significant P=0.047
Fordyce granule	2	0	2	0.07%	Significant P=0.09
Torus palatinus	5	9	14	1.3%	N.S

DISCUSSION

In the present study, oro-dental developmental anomalies was about 33.9% of the total sample, it was comparable to that found by Mohammed⁽¹¹⁾ which was 28.93% and Mahmood⁽¹²⁾ (28.22%) and AL-Nori and Al-Talabani⁽³⁾ (42.7%).

An interesting observation was recorded in this study, in which most of the oro-dental anomalies affect students at 16 years old. This finding may be claimed to as those students during the period of the 2nd gulf war were not still born or about to be born and they or their parents were subjected to contaminated atmosphere by the effect of radiation or chemical substances of weapons used.

Enamel hypoplasia represent 2.04% which was similar to that found by Mohammed⁽¹¹⁾ (2.07%), and nearly similar to that found by Mahmood⁽¹²⁾ (3.06%), but it less than that reported by Al-Nori⁽³⁾, Hag-Kasim⁽¹⁰⁾ and Sarkis⁽⁶⁾ which were 7.8% ,6.61% and 5.8% respectively. This difference in percentage than Baghdad and Mosul may be related to either local factors as local trauma or abscess or to a certain content in the type of nutrition, since in the south of Iraq, most of diet is fresh and rich in minerals like milk derivatives and different types of fish which is considered the main meal to the family in this area. Since nutritional defects such as vitamin D and calcium deficiency is a cited cause for enamel hypoplasia.

Environmental localized opacity prevalence was 4.9% and this is nearly similar to that reported by Mahmood⁽¹²⁾ in Halabja city which was 5.25%, and extremely less than that reported by Al-Nori,⁽³⁾ in Baghdad city, Hag-Kasim,⁽¹⁰⁾ in Mosul city and Mohammed⁽¹¹⁾ in Sulimania city which were 42.7%, 45.41% and 21.5%

respectively. These percentages are for white opacities only.

Environmental diffuse opacity represent 5.1% which is greater than that found by Mahmood⁽¹²⁾ in Halabja city was reported 1.53% of the sample, while the other Iraqi studies did not study this anomaly.

Attrition was seen in four students, (0.13% of the sample) which is less than that reported by Sarkis⁽⁶⁾ in Al-Radwaniya village near Baghdad in the center of Iraq which was 1.16%, whereas no other Iraqi studies mentioned the prevalence rate of attrition. The four students with attrition in the studied sample had a history of abnormal chewing habits associated with stress and shyness like (bruxism, pencil and nail biting).

Retained deciduous teeth constituted 3.3% of total sample. It is less than that found by Mahmood⁽¹²⁾ in Halabja city which was 7.6%. The mandibular primary second molar was the most commonly retained tooth found comprising 75.2% among other retained deciduous teeth. This coincides with that found by Mahmood⁽¹²⁾ in Halabja city.

Internal discoloration of teeth represents 0.89% of the sample and this result is nearly similar to that found by Al-Nori⁽³⁾ in Baghdad city which was 0.4%.

The prevalence of hypodontia (congenital missing tooth or teeth) in the sample was 1.64% which was similar to that found by Al-Farhan⁽¹⁴⁾ in Baghdad city, Sarkis⁽⁶⁾ in Al-Radwaniya village and which was 1.6% and 1.86% respectively. The result was nearly similar to that found by Mahmood⁽¹²⁾ in Halabja city which was 3.28%, but it less than that found by Younis in Baghdad city, Mohammed,⁽¹¹⁾ in Al-Sulimania city which were 8.9%, 8.26% respectively. The difference in prevalence rates compared with other previous studies might arise from racial

variation of studied samples and differences in sample size. In the present study, the maxillary lateral incisor is considered the most affected tooth with hypodontia which represents 58% of hypodontia cases in the study. This was in agreement with that found by Mohammed⁽¹¹⁾ in Al-Sulimania city, Mahmood⁽¹²⁾ in Halabja city and disagrees with that found by Sarkis⁽⁶⁾ in Al-Radwaniya village in which lower second premolar the most affected tooth with hypodontia.

Hyperdontia (supernumerary tooth or teeth) representing 0.36% of total sample and about 1.06% of total anomalies, which is in accordance with Al-Nori⁽³⁾ in Baghdad city which was 0.4% and nearly similar to that found by Sarkis⁽⁶⁾ in Al-Radwaniya village which was 0.93%. All the cases of supernumerary tooth seen were (mesiodens).

Microdontia represents 4.8% which was greater than that found by Al-Nori⁽³⁾ in Baghdad city, Sarkis⁽⁶⁾ in Al-Radwaniya village, Mahmood⁽¹²⁾ in Halabja city which were 1.1%, 1.86% and 1.75% respectively. The difference in results may be due to differences in sample size, racial variations and method of examination.

Talon cusp was detected in 7 cases which represents 0.23% of the sample; similarly to that recorded by Al-Nori⁽³⁾ in Baghdad, which was 0.2% and nearly similar to what is reported in Halabja city 0.56% by Mahmood⁽¹²⁾, but it is greater than that reported in Mosul city by Hag-Kasim (0.03%)⁽¹⁰⁾.

Cusp of carabelli was seen in 66 cases of present sample (2.17%), which was extremely less than that found by Rusmah⁽¹⁵⁾ in Malaysian children and Famlo⁽¹⁶⁾ in Nigeria which were 51.6% and 17.43% respectively; while no previous Iraqi studies reported this anomaly.

There was a single case of gemination reported in the studied sample (0.03%), but the result was less than that found by Hamasha and Al-Kateeb⁽¹⁷⁾ in Jordanian population which was 0.22%. Gemination was not reported in previous Iraqi studies.

There was a single case (14 years-old male) of dens invaginatus in the whole sample, representing 0.03% in total sample and 0.09% of total affected cases

Cleft lip represents 0.13% of the studied sample and this finding is similar to that found by Mahmood⁽¹²⁾ in Halabja city which was 0.22%.

Commissural lip pits represent 0.1% and this agrees with the result of Mahmood⁽¹²⁾ in Halabja city which was 0.22% and less than that reported by Hag-Kasim⁽¹⁰⁾ in Mosul city and Mohammed⁽¹¹⁾ in Sulimania city which were 10.9% and

2.15%. It is less than that found in Baghdad 13.9% by Al-Nori⁽³⁾.

Fissure tongue represents 4.9% of the studied sample. This finding is similar to that found by Al-Nori⁽³⁾ in Baghdad city and Hag-Kasim⁽¹⁰⁾ in Mosul city which were 4.7% and 4.04% respectively. The result was greater than that found by Ghose and Baghdady⁽¹⁸⁾ among 6-12 years old children in Baghdad city, Mohammed⁽¹¹⁾ in Sulimania city and Mahmood⁽¹²⁾ in Halabja city which were 2.6% , 1.67% and 1.1% respectively The result is less than that found by Younis⁽⁷⁾ in two Iraqi villages and Muhammed⁽⁹⁾ in two villages in Baghdad district which were 31.87% and 6.2% respectively The differences of the results between the present study and other previous studies in other parts of Iraq and around the world may be due to the variation in age of the studied sample, where all the examinations were performed on 14-17 years old students and fissure tongue as developmental anomaly regarding distribution, size and depth of fissuring is known to increase with age of the patient.

Macroglossia represents 0.07% which was less than that found by Muhammed⁽⁹⁾ in Baghdad and Mahmood⁽¹²⁾ in Halabja city which were 0.8% and 0.66% respectively.

There was a single case microglossia reported in the studied sample representing 0.03%, which was extremely less than that found by Muhammed⁽⁹⁾ in Baghdad city 2.4%.

















Geographic tongue was recorded in 1.31% of the studied sample and this finding is compatible with that reported by Muhammed⁽⁹⁾ in two areas of Baghdad district. The result disagrees with other Iraqi studies in which there was a higher prevalence values were observed : Ghose and Baghdady⁽¹⁸⁾, Al-Nori⁽³⁾, Al-Dori⁽⁴⁾, Rasheed and Al-Jubori⁽⁵⁾ and Younis⁽⁷⁾ which were 4.3% , 3.7%, 3.9%, 2.6% and 2.4% respectively. The variations between the results of present study with other studies may be explained according to differences in age of the sampled population, since the sample examined in this study were teenagers who express less geographic tongue than the adults. Additionally differences in diagnosis of this examined condition and evaluation.












Among all the examined population there was only 2 males reported having Fordyce granules (0.07%). The result extremely less than that found by Al-Nori⁽³⁾ in Baghdad city which was 40%, the difference may be due to the variations in age or examination criteria of the sample.

Torus palatinus prevalence was 0.46% for the total studied sample and the result lower than that found by Sukker⁽¹⁹⁾ in group of Iraqi patients,

Rasheed and Al-Jubori⁽⁵⁾ in Baghdad city, Younis and Majeed⁽²⁰⁾ in two Iraqi villages and Muhammed⁽⁹⁾ in two villages of Baghdad district which were 10.1% , 2%, 13.9% and 3.2% respectively. The conflicting results may be

attributed to the racial variations, the differences in the type of diet consumed and age of examined population, since this condition become more prominent by age.

			
Enamel Hypoplasia	Environmental Localized	Environmental Diffuse	Attrition
			
Retained deciduous teeth due to congenital missing of permanent successor (clinical picture and related x-ray)	Opacity	Retained deciduous teeth due to impaction of underlying permanent successor (clinical picture and related x-ray)	Opacity
			
Impacted canine (clinical picture and related x-ray)		Internal Discoloration	Hyperdontia (mesiodens) of Teeth
			
Hypodontia (congenital missing maxillary right lateral)	Microdontia (peg-shaped)	Talon cusp (maxillary incisor (clinical picture and related x-ray))	maxillary left lateral incisor, canines

			
Cusp of carabelli	Gemination	Dens Invaginatus	Surgical repaired cleft lip
			
Commissural lip pits	Fissured Tongue	Macroglossia	Varicosities
			
Geographic Tongue	Fordyce granules	Torus Palatinus	

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