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Full Length Research Paper

The prevalence of oro-dental anomalies among 14-17 years students in Panchkula District Haryana, India

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The aim of this study was to find out the prevalence of oro-dental anomalies among 14 to 17 years students in Panchkula District Haryana, India. Oral examination among 3248 students (1608 males and 1640 females) aged 14 to 17 years in Panchkula District of Haryana was carried out in 18 secondary and intermediate schools. Oro-dental developmental anomalies seen in 946 students represents 29.1% of the studied sample, 42.1% males and 57.9% females; there was a significant statistical difference between them. Majority of the oro-dental developmental anomalies were presented in 16 years age group in the sample. The study reported that 29.8% of the participants were affected with atleast one dental anomaly. Enamel hypoplasia, followed by microdontia was the most common findings. Geographic tongue, commissural lip pits, fissured tongue and lingual varicosities showed a significant statistical difference among the two genders.

Key words: Oral anomalies, dental anomalies, prevalence.

INTRODUCTION

Developmental anomalies of teeth, 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 (Mohanad and Wasan, 2009). Most of these anomalies are congenital (ithat is, 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 (Makki, 2003).

Studies on the prevalence of dental anomalies show divergent results (Ezoddini et al., 2007; Gupta et al., 2011; Thongudomporn and Freer, 1998; Uslu et al., 2009); while some investigations show the prevalence of tooth anomalies as low as 21% (Ooshima et al., 1996), other studies show the prevalence of almost 75% (Thongudomporn and Freer, 1998). Several investigations report a prevalence of tooth anomalies to be between 34 and 40% (Ezoddini et al., 2007; Gupta et al., 2011). The reasons for such discrepancies can be multifold. Ethnical differences can be one explanation, but the type of dental anomalies investigated and the use of different diagnostic criteria can also contribute to the

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divergent results.

Around 7% of children are born with some of the disturbances in the oro-facial region and most commonly are supernumerary teeth, missing teeth, fused teeth and peg lateral incisors (Clayton, 1956). Dental anomalies in comparison with more common oral disorders such as dental caries and periodontal diseases have low frequency, but their management procedure is more complicated, because they can result in esthetic problems, malocclusion, and lead to the other oral problems (Ghabanchi et al., 2010). In industrialized countries, there are about 10% of children with developmental disturbances, whereas in developing countries like India their percentage is higher, ranging between 15 and 20%. The identification of oral/dental and minor anomalies is of great importance for timely and accurate diagnosis of numerous genetic abnormalities of the craniofacial region (Patel and Kleinman, 2003). Hence, this study was done to know the prevalence of oro-dental anomalies among school going adolescents.

METHODOLOGY

This study was conducted among 3248 students (1608 males and 1640 females) aged 14 to 17 years in Panchkula District of Haryana, India during a four month period in 2014. Eighteen (18) secondary and intermediate schools from Panchkula district were randomly selected. The study population was taken with cluster sampling technique. The study sample was divided into 4 age groups (14 years = 812 students, 15 years = 812 students, 16 years = 814 students and 17 years = 810 students) with an equal male:female ratio in each age group. Before scheduling the survey, the official permission was obtained from the Institutional Ethical and Review Committee of Swami Devi Dyal Hospital and Dental College (dated: 2 January, 2014). Official permission was obtained from the heads of the institutes from the district. Informed oral consent was obtained prior to examination of each subject. A pilot survey was conducted in one of the school on 100 randomly selected subjects to know the prevalence of dental anomalies and feasibility of the survey. Children with any kind of medical history such as Down's syndrome, ectodermal dysplasia, cleft lip and cleft palate were excluded from the study. The clinical examination of the oral and dental anomalies was performed using sets of instruments consisting of plane mouth mirrors and sharp probes which are kept in a kidney tray containing 2.5% gluteraldehyde 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. Clinical examination was done to know the prevalence of hard and soft tissues defects. All subjects were made to sit in a chair under natural light for examination (Type III). The recording clerk was made to sit near to the examiner so that the instructions could be effortlessly recorded.

Data analysis

The statistical software, namely, Statistical Package for Social Sciences (SPSS) version 16.0 was used for data analysis. Values were compared using Chi-square test. The p value of 0.05 or less was considered as statistically significant.

RESULTS

The total number of affected students was 946 students (398 males and 548 females) representing 29.1% of total sample. There was a statistical difference between males and females. Most of the 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 the age groups (P-value<0.001).

The prevalence of different dental developmental anomalies examined in this study is as shown in Table 2 concerning the sex and statistical difference. Environmental diffuse opacity was the most common oro-dental developmental anomaly in this study (4.9%). Micro-dontia represented 4.01% which was considered the higher prevalence rate. Dens invaginatus had the lower prevalence in this study (0.03%). There was a highly significant statistical difference between males and females in enamel opacities of teeth (P-value=0.001).

Table 3 shows the prevalence rate of different oral soft and hard tissues anomalies; fissured tongue showed higher prevalence (4.2%) among other oral soft tissue anomalies and was considered the most common anomaly of the tongue in this study. Geographic tongue had a high significant statistical difference between sexes (P-value<0.001). Commissural lip pits, fissured tongue and lingual varicosities showed a significant statistical difference between males and females. Microglossia had lower prevalence (0.03%) among soft tissue anomalies. Torus palatinus was the only hard tissue anomaly seen in this study represented by 0.4%.

DISCUSSION

The presence of dental anomalies is commonly seen during routine dental check-up. In the present study, the prevalence of permanent tooth anomalies was assessed among 14 to 17 year old school children in rural and urban areas of Panchkula District, Haryana, India. Although there have been several studies reporting the prevalence of various dental anomalies, no reported study has been carried out in this region.

The results of this study indicate higher prevalence rates of dental anomalies among all the age groups in comparison to earlier studies. The reason for such difference could be different degrees of severity from the mildest developmental delay to the most severe tooth agenesis manifestation; dental anomalies may be expressed as microdontia, changes in dental morphology and ectopias and also varying definitions of dental anomalies (Garn et al., 1965). Earlier studies have also suggested genetic and hereditary background in the causation of dental anomalies affecting size, shape, number, position and timing of development (Vastardis, 2000; Markovic, 1982; Mossey, 1999; Baccetti, 1998).

Environmental diffuse and localized opacities were the

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

Age (Years)	Total	Male	Female	%
14	160	54	106	16.9
15	267	148	119	28.2
16	298	112	186	31.5
17	221	84	137	23.4
Total	946	398	548	100

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

Dental anomaly	Total	%	Male	Female	P-value
Enamel hypoplasia	82	2.5	26	56	0.001**
Environmental localized opacity	142	4.4	68	84	NS
Environmental diffuse opacity	158	4.9	59	99	NS
Attrition	13	0.4	8	5	NS
Retained deciduous teeth	101	3.4	45	56	0.007*
Supernumerary teeth	11	0.34	7	4	0.03*
Microdontia	129	4.01	61	68	NS
Macrodontia	44	1.4	19	25	NS
Talon cusp	7	0.22	4	3	0.02*
Rotation	66	2.03	31	35	0.05*
Dens invaginatus	1	.03	0	1	NS

NS: Non-significant; *Significant; **Highly significant.

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

Oral anomaly	Total	%	Male	Female	P-value
Cleft lip	4	0.12	2	2	NS
Commissural lip pits	3	0.09	3	0	0.047*
Fissure tongue	136	4.2	51	85	0.09*
Geographic tongue	30	0.92	10	20	<0.001**
Macroglossia	2	0.06	2	0	0.049*
Microglossia	1	0.03	0	1	NS
Lingual varicosities	3	0.09	3	0	0.047*
Torus palatinus	13	0.40	4	9	NS

NS: Non-significant; *Significant; **Highly significant.

most common oro-dental developmental anomalies in this study (4.9 and 4.4%, respectively). Studies conducted by Kathariya et al. (2013) and Ooshima et al. (1996) also reported similar frequency. Microdontia represented 4.01% of the cases, which is comparable to study done by Kathariya et al. (2013). This study separately recorded the prevalence of retained deciduous teeth (3.4%), rotation (2.03%), enamel hypoplasia (2.5%), attrition (0.4%), supernumerary teeth (0.34%), macrodontia (1.4%), talon cusp (0.22%) and dens invaginatus (0.03%). There was a highly significant statistical difference between males and females in enamel opacities of teeth (p value < 0.001). The prevalence of supernumerary teeth is less when compared with study conducted by Gupta et al. (2011), where they recorded a prevalence of 2.40%, whereas occurrence of other anomalies can be compared with other studies done by Mahmood (2008).

On comparing prevalence among males and females, significant difference was observed only for the enamel opacities, which was also observed by Mohanad and Wasan (2009) in their study.

This study also compared prevalence rates of oral soft and hard tissues anomalies. Fissured tongue was seen in 4.2% of the study population which is less than the study conducted by Younis and Majeed (2002) and Muhammed and Qassim (2005) among higher age groups, in which they reported prevalence of 31.87 and 6.2%, respectively. This difference could be attributed to the fact that incidence of geographic tongue increase with age. Geographic tongue, commissural lip pits, fissured tongue and lingual varicosities showed a significant statistical difference between males and females. The reasons for such a difference should be explored and similar studies can be carried out to prove the gender predilection for several dental anomalies.

This clinical survey had a limitation that radiographs were not used in this study which could have underestimated the prevalence of dental anomalies which could otherwise be visible on a radiograph. However, this research does open new vistas for prevention and treatment planning programs for those who were suffering from these diseases or more prone to these diseases.

Conclusion

This study reported that 29.8% of the participants were affected with atleast one dental anomaly. Enamel hypoplasia followed by microdontia were the most common finding. Among hard tissues, there was a significant statistical difference between males and females in enamel opacities of teeth whereas among the soft tissues, geographic tongue, commissural lip pits, fissured tongue and lingual varicosities showed a significant statistical difference among the two genders. The high levels of these anomalies among the school children suggests to find the etiological factors involved in the occurrence of dental anomalies, as well as formulation of effective dental programs for the timely screening and treatment of such defects.

Conflict of interests

The authors declare that they have no conflict of interest.

REFERENCES

Baccetti T (1998). A controlled study of associated dental anomalies. Angle Orthod. 68(3):267–274.

Clayton JM (1956) . Congenital dental anomalies occurring in 3557 children. J. Dent. Child 23:206-208.

Ezoddini AF, Sheikhha MH, Ahmadi H (2007). Prevalence of dental developmental anomalies: A radio-graphic study. Community Dent. Health 24:140-144.

Garn SM, Lewis AB, Kerewsky RS (1965). X-linked inheritance of tooth size. J. Dent. Res. 44:439-441.

Ghabanchi J, Haghnegahdar AA, Khodadazadeh SH, Haghnegahdar S (2010). A Radiographic and Clinical Survey of Dental Anomalies in Patients Referring to Shiraz Dental School. Shiraz Univ. Dent. J. 10(Suppl):26-31.

Gupta SK, Saxena P, Jain S, Jain D (2011). Prevalence and distribution of selected developmental dental anomalies in an Indian population. J. Oral Sci. 53:231-238.

Kathariya MD, Nikam AP, Chopra K, Patil NN, Raheja H, Kathariya R (2013). Prevalence of Dental Anomalies among School Going Children in India. J. Int. Oral Health 5(5):10-14.

Mahmood M (2008). Possible effects of chemical weapons used in Halabja Martyr city at 16th March 1988 developing oral and dental tissues. Master Thesis, college of Dentistry, Sulaimania University.

Makki Z (2003). Enamel hypoplasia, dental and oral anomalies among young diabetic children in Baghdad, Iraq. Iraqi Dent. J. 33:126-134.

Markovic M (1982). “Hypodontia in twins”. Swed. Dent. J. 15:153-162.

Mohanad JN, Wasan HY (2009). The prevalence of oral and dental developmental anomalies among 14-17 years Iraqi students in Missan governorate. J. Baghdad Coll. Dent. 21(4):90-95.

Mossey PA (1999). “The heritability of malocclusion: part 2. The influence of genetics in malocclusion.” Br. J. Orthod. 26(3):195–203.

Muhammed Z, Qassim W (2005). Prevalence of developmental oral anomalies among school children in two areas of Baghdad district. J. Coll. Dent. 17(1):51-53.

Ooshima T, Ishida R, Mishima K, Sobue S (1996). The prevalence of developmental anomalies of teeth and their association with tooth size in the primary and permanent dentitions of 1650 Japanese children. Int. J. Paediatr. Dent. 6(2):87-94.

Patel V, Kleinman A (2003). Poverty and common mental disorders in developing countries. Bull. World Health Organ. 81(8):609-615.

Thongudomporn U, Freer TJ (1998). Prevalence of dental anomalies in orthodontic patients. Aust. Dent. J. 43(6):395-398.

Uslu O, Akcam MO, Evirgen S, Cebeci I (2009). Prevalence of dental anomalies in various malocclusions. Am. J. Orthod. Dentofacial Orthop. 135(3):328-335.

Vastardis H (2000). “The genetics of human tooth agenesis: new discoveries for understanding dental anomalies,” Am. J. Orthod. Dentofacial Orthoped. 117(6):650-656.

Younis W, Majeed A (2002). Torus Palatinus in Group of Iraqi People/Prevalence and Etiology. Iraqi Dent. J. 31:115-123.