Occupational Medicine & Health Affairs
ISSN: 2329-6879

Jitender et al., Occup Med Health Aff 2014, 2:5
DOI: 10.4172/2329-6879.1000183

Research Article Open Access

Developmental Dental Disorders and Tongue Lesions in Pediatrics of Western India: A Prevelance Study

Jitender Solanki[1*], Sarika Gupta[2], Ravinder Singh[3], Rajesh Vyas[3] and Jitendra Khetan[4]

[1]*Department of Public Health Dentistry, Vyas Dental College and Hospital, Jodhpur, rajasthan, India*

[2]*Department of Oral Medicine & Radiology, Vyas Dental College and Hospital, Jodhpur, Rajasthan, India*

[3]*Department of Prosthodontics, King Khalid University, Saudi Arabia*

[4]*Department of Prosthodontics, Vyas Dental College and Hospital, Jodhpur, Rajasthan, India*

[*]**Corresponding author:** Jitender solanki, Department of Public Health Dentistry, Vyas Dental College and Hospital, jodhpur, rajasthan, India, Tel: 91-9571580558; E-mail: solankijitender@gmail.com

Received date: October 20, 2014, **Accepted date:** November 05, 2014, **Published date:** November 12, 2014

Abstract

Objective: There is an increase in the frequency of occurrence of Developmental dental Anomalies of oral cavity in all populations. The study was carried out to find the Prevalence of developmental dental anomalies and to assess of oral health status of children upto 15 years of age.

Methods: A cross-sectional study was carried out among total of 6000 children which comprised of equal males and females (3000 each). Clinical assessment of oral cavity was done for the presence of any developmental disorder in the children. Demographic information was recorded for each subject: age, gender, and education for study subjects and the occupation and income of their parents, on a structured profoma. The data collected was than tabulated and subjected to descriptive statistics

Results: Out of total study subjects 1731 (28.8%) had developmental dental anomalies whereas 4269 (71.2%) had no anomalies. Developmental dental anomalies was seen in (27.8%) of males and 29.8% of females). Tongue disorders were seen in 480 (8%) of the subjects, among them the prevalence of coated tongue was 265 (55%),

Conclusions: Parents of children with developmental anomalies should be educated about the type and cause of anomaly and they should even be motivated to get the possible treatment done for the same.

Keywords: Developmental disorder; Disorder; Syndrome; Anomalies; Nutritional factors

Introduction

The evaluation of patients with multiple congenital anomalies (MCAs) is of critical importance because. All unbalanced autosomal chromosomal aberrations and most gene mutations and teratogens produce syndromes. Therefore, MCAs are sensitive indicators of germinal mutagens and teratogens [1]. The delineation of an MCA-entity facilitates a better understanding of the phenotypic spectrum, prognosis, and origin of the condition. The latter may be of great importance in genetic counseling or to detect new teratogenic agents [1]. Gene mapping efforts for some of these conditions might become feasible after the identification of informative families. Epidemiological studies have suggested an increase in the frequency of occurrence of Developmental dental Anomalies [DDA] of oral cavity in all populations, thus underlining their clinical significance and public health importance [2,3]. The risk of DDA is related to social factors [4-6], nutritional problems [5,6], excessive exposure to fluoride and infectious diseases [4,5,7], occurring during the pre- and post natal period of amelogenesis. However, the exact mechanism and etiological factors are not fully understood [8]. Previous studies have shown that maternal ingestion of chemicals such as fluorides, tetracycline and thalidomide are associated with higher prevalence of DDA [4,9]. The above Evidence suggests that Developmental Anomalies of mouth are important risk factors for various dental problems both in the primary as well as the permanent dentition, so this study was carried out to find the Prevalence of developmental dental anomalies of children upto 15 years of age.

Material and Methods

The present study was carried out in the villages around Jodhpur city by the department of Public Health Dentistry, Vyas dental college and hospital during the camps that were conducted in these two years. Total 66 camps were conducted in the span of two years in rural areas of Jodhpur tehsil. Jodhpur is the second largest district in Rajasthan with 7 Tehsils. According to census 2011, the total rural population of Jodhpur is 2,39,796 consisting of 1,24,432 males and 1,15,364 females. The target populations for our study were the children of rural areas of the age group of 5, 12 and 15 years. Total population of 5, 12 and 15 year age group children in rural areas was 41,560 in which 22,520 were males and 19,040 females. Study selection criteria included the subjects who were born in Jodhpur city and were of the age (5, 12 and 15 years). Uncooperative subjects and those whose parents were not willing were excluded from the study. A total of 6000 children were taken that comprised of equal males and females (3000 each). Calibration: The oral examination of all the study subjects was carried out by 2 examiners who were trained and calibrated in the Department

of public health Dentistry. Training took 2 days, with further 2-3 days for calibration. The inter-examiner variability was tested and the weighted kappa statistic was (.80). Examination and data collection: A cross sectional study was carried out. Children were made to sit on a comfortable chair or in the lap of their mother in a well illuminated airy room. Clinical examination was done using mouth mirror and WHO probe. Clinical assessment of oral cavity was done for the presence of any developmental disorder in the children. Demographic information was recorded for each subject: age, gender, and education for study subjects and the occupation and income of their parents, on a structured profoma. This was completed by the recorder during the clinical examination. Information was obtained from school authorities for children who could not provide the information.

Statistical analysis All the data was collected and calculations for each clinical parameter were done. The data collected was than tabulated and subjected to descriptive statistics.

Result

A cross sectional study was carried out to assess the prevalence of developmental anomalies of oral cavity in rural children of Jodhpur city. The study comprised of 6000 school going children, with equal number of males and females. Out of total study subjects 1731 (28.8%) had developmental dental anomalies whereas 4269 (71.2%) had no anomalies. Among the subjects with dental anomalies, Talons cusp was seen in only 184 (10.6%) of the subjects whereas hypoplasia was seen in 816 (47.1%). Hypoplasia was the only anomaly seen in 5 year children 34 (Table 1).

Age groups	Number of patients	Mesiodens	Peglateral	Hypoplasia	Talons cusp	Number of anomalies	No abnormality
5 years	2000	0	0	34	0	34 (1.96%)	1966
12 years	2000	179	104	196	64	543 (31.3%)	1457
15 years	2000	290	158	586	120	1154 (66.6%)	846
Total	6000	469 (27.09%)	262 (15.1%)	816 (47.1%)	184 (10.6%)	1731 (28.8%)	4269

Table 1: Prevalence of Developmental Dental Anomalies (28.8%)

Developmental dental anomalies was seen in (27.8%) of males in which hypoplasia was seen in 396 (47.4%) followed by mesiodens 221 (26.4%) and talons cusp was seen only in 10.0% of the subjects (Table 2).

Age groups	Number of patients	Mesiodens	Peglateral	Hypoplasia	Talons cusp	Number of anomalies	No abnormality
5 years	1000	0	0	18	0	18 (2.15%)	982
12 years	1000	87	48	94	28	257 (230.7%)	743
15 years	1000	134	86	284	56	560 (67.0%)	440
Total	3000	221 (26.4%)	134 (16.0%)	396 (47.4%)	84 (10.0%)	835 (27.8%)	2165

Table 2: Developmental Dental Anomalies in males (27.8%)

Among the female participants, developmental dental anomalies were seen in (29.8%) of females. Hypoplasia was seen in 420 (46.8%), mesiodens in 248 (27.6%) and talonscusp in 100 (11.1%) subjects. Subjects of the age group of 15 years had highest percentage (66.2%) of developmental anomalies (Table 3).

Age groups	Number of patients	Mesiodens	Peglateral	Hypoplasia	Talons cusp	Number of anomalies	No abnormality
5 years	1000	0	0	16	0	16 (1.78%)	986
12 years	1000	92	56	102	36	286 (31.9%)	714
15 years	1000	156	72	302	64	594 (66.2%)	406
Total	3000	248 (27.6%)	128 (14.2%)	420 (46.8%)	100 (11.1%)	896 (29.8%)	2104

Table 3: Developmental Dental Anomalies in Females (29.8%)

For subjects with tongue disorders, the prevalence was higher in males 388 (81.9%) as compared to that of females 92 (19.1%) (Table 4).

Gender	Number of children (%)
Male	388 (81.9%)
Female	92 (19.1%)
Total	480 (8%)

Table 4: Gender wise distribution of tongue disorders

Tongue disorders were seen in 480 (8%) of the subjects, among them the prevalence of coated tongue was 265 (55%), followed by the prevalence of fissured tongue 72 (15%) and hairy tongue was seen only in 3 subjects (0.62%) (Table 5).

Disorder of tongue	Number of children N (%)
Fissured tongue	72 (15%)
Coated tongue	265 (55%)
Ankyloglossia	58 (12%)
Macroglossia	38 (7.9%)
Cleft tongue	14 (2.9%)
Hairy tongue	3 (0.62%)
Geographic tongue	30 (6.25%)
Total	480 (8%)

Table 5: Distribution of developmental disorders of tongue (8%)

Discussion

Early detection of developmental dental anomalies (DDA) can lead to better treatment outcomes for the patients. This could be done by thorough history of the lesion and good diagnostic ability of the dental practitioner. Studies considering the prevalence and covariates of DDA vary considerably with respect to characteristics of the populations investigated, measurement aspects and study design utilized [10]. In our study the prevalence of DDA was seen to be 28.8% which is in concordance with other studies which reported that the prevalence range's between 24% and 49% [11,12]. Out of the total DDA, hypoplasia was observed in 47.1% children. Whereas Seow et al. [10] and Robles et al. [12] reported a prevalence of 25% and 40.2% respectively. This variation could be due to the varying level of fluoride in drinking water of these places. The present study reported a great variation in prevalence of hypoplasia from a study conducted by Nayak et al. [13] in population of western India who has reported a prevalence of 23.6% in school going children. This variation highlights the higher level of fluoride in drinking water in rural areas. Other than this, under nutrition and childhood infections during the period of tooth development are also said to be associated with enamel defects in socioeconomically underprivileged communities [6].

Mesiodens was the only supernumerary teeth seen in the present study. Studies have reported a prevalence of 0.1-3.8% with a male to female ratio of 2:1 [13,14]. In the present study the prevalence of mesiodens was found to be 27.09%, which was much higher. Also, no sexual predominance was observed. Previous studies have reported the prevalence of peg lateral in the range of 0.33% to1.51% [13,15,16] as compared to prevalence of 15.1% in the present study. These differences could be attributed to racial and ethnic difference between populations and the effects of genetics, development and environmental effects on the development of dentition. Talon's cusp was seen in 10.6% of total population studied which is in harmony with studies who have reported a prevalence of 0.04-10% [13,17].

In the present study, the prevalence of lesions associated with tongue in children was 8%, which supports the findings of other studies who have reported a prevalence ranging from 4.95% to 35.11% [18-21]. Not many studies have been carried out to assess the prevalence of coated tongue since it has been considered as a pseudo pathological condition. This condition has been studied in the present study because as reported by Garcia & al there is a statistically significant relationship between its presence and dento-alveolar fistulae [22]. Coated tongue was seen in maximum number of children (55%). Whereas Madera et al. [23] reported a prevalence of 74.6%. This difference could be attributed to the larger sample size and difference in type of population studied. In the present study, fissured tongue was seen in 15% of the children which lies in the range of 0.9% to 44.8% as observed in other studies [18-21,24]. Studies have reported the prevalence of ankyloglossia in pediatrics ranges from 1.3% to 8.1% [18,19,20,24]. On the contrary, in the present study the prevalence was much higher 12%. A chromosomal locus has been identified for some familially expressed examples of ankyloglossia but it is unlikely that the same locus is involved in all cases [25]. In the present study macroglossia was seen in 7.9% patients which is again much higher than reported by other studies [18,19,24]. This could be attributed to the hereditary factors in the study population. The prevalence of cleft tongue in the present study was 2.9%, which is higher than that studied by previous studies [18]. This difference could be due to the larger population size in the present study and difference in type of population studied. The prevelance of geographic tongue in the previous studies [19-21] is in concordance with that seen in the present study 6.25%. The prevalence of hairy tongue has been reported in the range of 0.2% to 0.8%. Similar observations were made in our study 0.6%.

The difference in prevalence of tongue lesions in the present study as compared to other studies could be a result of comparatively very large sample size, difference in type of population studied in terms of races, socio economic factors, nutritional factors, etc.

Conclusion

The type of population studied in the present study has varied greatly from the other populations when compared in terms of genetics and environmental factors. Therefore, the results have varied hugely. Parents of these children should be educated about the type and cause of anomaly and they should even be motivated to get the possible treatment done for the same.

References

1. Czeizel A (1988) Additive congenital anomaly patterns. Am J Med Genet 29: 727-738.
2. Suckling GW (1989) Developmental defects of enamel--historical and present-day perspectives of their pathogenesis. Adv Dent Res 3: 87-94.
3. Casanova-Rosado AJ, Medina-Solis CE, Casanova-Rosado JF, Vallejos-Sanchez AA, Martinez-Mier EA, et al. (2011) Association between developmental enamel defects in the primary and permanent dentitions. Eur J Paediatr Dent.12:155-158.

4. Needleman HL, Allred E, Bellinger D, Leviton A, Rabinowitz M, et al. (1992) Antecedents and correlates of hypoplastic enamel defects of primary incisors. Pediatr Dent 14: 158-166.
5. Rugg-Gunn AJ, Al-Mohammadi SM, Butler TJ (1998) Malnutrition and developmental defects of enamel in 2- to 6-year-old Saudi boys. Caries Res 32: 181-192.
6. Chaves AM, Rosenblatt A, Oliveira OF (2007) Enamel defects and its relation to life course events in primary dentition of Brazilian children: a longitudinal study. Community Dent Health 24: 31-36.
7. Guergolette RP, Dezan CC, Frossard WT, Ferreira FB, Cerci Neto A, et al. (2009) Prevalence of developmental defects of enamel in children and adolescents with asthma. J Bras Pneumol 35: 295-300.
8. Aine L, Backström MC, Mäki R, Kuusela AL, Koivisto AM, et al. (2000) Enamel defects in primary and permanent teeth of children born prematurely. J Oral Pathol Med 29: 403-409.
9. Lunardelli SE, Peres MA (2005) Prevalence and distribution of developmental enamel defects in the primary dentition of pre-school children. Braz Oral Res 19: 144-149.
10. Seow WK, Ford D, Kazoullis S, Newman B, Holcombe T (2011) Comparison of enamel defects in the primary and permanent dentitions of children from a low-fluoride District in Australia. Pediatr Dent 33: 207-212.
11. Slayton RL, Warren JJ, Kanellis MJ, Levy SM, Islam M (2001) Prevalence of enamel hypoplasia and isolated opacities in the primary dentition. Pediatr Dent 23: 32-36.
12. Robles MJ, Ruiz M, Bravo-Perez M, González E, Peñalver MA (2013) Prevalence of enamel defects in primary and permanent teeth in a group of schoolchildren from Granada (Spain). Med Oral Patol Oral Cir Bucal 18: e187-193.
13. Nayak P, Nayak S (2011) Prevalence and distribution of dental anomalies in 500 Indian school children. Bangladesh Journal of Medical Science10:41-44.
14. Srivatsan P, Aravindha Babu N (2007) Mesiodens with an unusual morphology and multiple impacted supernumerary teeth in a non-syndromic patient. Indian J Dent Res 18: 138-140.
15. Altug-Atac AT, Erdem D (2007) Prevalence and distribution of dental anomalies in orthodontic patients. Am J Orthod Dentofacial Orthop 131: 510-514.
16. Clayton JM (1956) Congenital dental anomalies occurring in 3557 children. J Dent Child 23:206-208.
17. Tulunoglu O, Cankala DU, Ozdemir RC (2007) Talon's cusp: report of four unusual cases. J Indian Soc Pedod Prev Dent 25: 52-55.
18. Ugar-Cankal D, Denizci S, Hocaoglu T (2005) Prevalence of tongue lesions among Turkish schoolchildren. Saudi Med J 26: 1962-1967.
19. Aljawfi K (2013) Frequency of Tongue Anomalies among Yemeni Children in Dental Clinics. Yemeni Journal for Medical Sciences. 7:27-32.
20. Khozeimeh F, Rasti G (2006) The Prevalence of Tongue Abnormalities among the School Children in Borazjan, Iran. Dental Research Journal 1:1-5.
21. Vörös-Balog T, Vincze N, Bánóczy J (2003) Prevalence of tongue lesions in Hungarian children. Oral Dis 9: 84-87.
22. Garcia-Pola MJ, Garcia JM, Gonzalez M (2002) Estudio epidemiologico de la patologia de la mucosa oral en la poblacion infantil de 6anos de Oviedo (Espana). Medicina Oral 7: 184-191.
23. Madera AMV (2013) Prevalence of tongue alterations and related factors in children attending the University of Cartagena, Colombia. Revista Odontológica Mexicana 17:231-235.
24. Wajnaa F Qassim, Zaheda J (2005) Muhammad. Prevalence of developmental oral anomalies among school children in two areas of Baghdad district. J Coll Dentistry 17:51-53.
25. Björnsson A, Arnason A, Tippet P (1989) X-linked cleft palate and ankyloglossia in an Icelandic family. Cleft Palate J 26: 3-8.