

Prevalence of Dental Anomalies in Deciduous Dentition of School Children Aged 3-6 Years of Gandhinagar City

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ABSTRACT

Aim: To document the prevalence of the dental anomalies in deciduous dentition of school children aged 3 – 6 years of Gandhinagar city.

Methods and Material: A cross sectional study was conducted on 800 school going children using ADA type 3 examination method. Disparity in dentition was recorded according to the modified Kreiborg criteria and results were statistically analyzed. Statistical analysis used: A randomized clinical study statistical analysis done using nonparametric, Chi Square test for categorical data, For all statistical analysis, probability levels of $P < 0.05$ considered statistically significant.

Results: Dental anomalies were prevalent in 6.12% subjects. Developmental Enamel Defects was recorded highest (67.35%) followed by local microdontia (16.32%) and fusion (16.32%) and was statistically significant.

Conclusions: This study showed the prevalence of dental anomalies in deciduous dentition in good number. Hence further detailed study in different age groups, ethnicity and in more population is required in this aspect to prevent the complications in successive dentition.

Keywords: Dental anomalies, Developmental defects of enamel, Primary dentition.

INTRODUCTION

Dental anomalies are defined as an aberration in which one or more teeth deviate from the normal form, function or position. Dental anomalies are mainly characterized into four categories like number, size, shape and structure. Most commonly found dental anomalies in primary dentition are according to number hypodontia, hyperdontia, according to size microdontia and macrodontia, according to shape fusion and gemination and according to structure developmental defects of enamel (DDE).

Developmental defects of enamel differentiate from the white spot lesion by air drying of teeth and site of occurrence. White spot lesion appears on drying but after wetting the surface the lesion disappears, while developmental defects of enamel is visible after wetting the tooth surface. White spot lesions commonly occur on plaque retentive areas mostly on gingival 3rd of the tooth surface.

Dental anomalies in primary dentition usually go unnoticed and often have their mark in permanent dentition. These are associated with various problems in children like dental caries, orthodontic problems, periodontal problems, speech and

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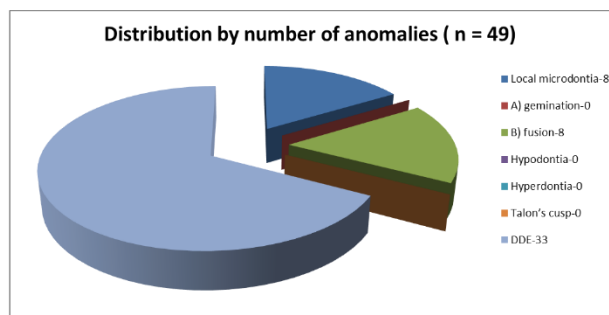


Fig 1: Distribution by number of anomalies (n = 49).

Table 1: Demographic variables and statistical significances for overall anomalies.

CRITERION	SAMPLE	P – VALUE
Total number of children	800 (male : 415, female : 385)	P=0.2888
Total number of children with anomalies	49	
Total number of anomalies	49	
GENDER		
Male	31	p=0.0633
Female	18	
REGION		
Maxillary arch	39	Z=1.477, p=0.01396
Mandibular arch	27	
LOCATION		
Unilateral	20	Z=1.664, p=0.0964
Bilateral	32	

Table 2: Distribution of DDE by gender, region, and location (33 of 49 children).

CRITERION	SAMPLE SIZE	P – VALUE
GENDER		
Male	19	p=0.03841
Female	14	
REGION		
Maxillary arch	31	Z=1.857, p=0.0633
Mandibular arch	18	
LOCATION		
Unilateral	9	Z=3.000, p=0.0027
Bilateral	27	

Table 3: Distribution of Local microdontia by gender, region, and location (8 of 49 children).

CRITERION	SAMPLE SIZE	P – VALUE
GENDER		
Male	5	p=0.0961
Female	3	
REGION		
Maxillary arch	6	Z=6.647, p=<0.001
Mandibular arch	3	
LOCATION		
Unilateral	3	Z=6.379, p=<0.001
Bilateral	5	

Table 4: Distribution of Double teeth by gender, region, and location (8 of 49 children)(Fusion = 8, gemination = 0).

CRITERION	SAMPLE SIZE	P – VALUE
GENDER		
Male	7	P=0.0339
Female	1	
REGION		
Maxillary arch	2	Z=1.414, p=0.01573
Mandibular arch	6	
LOCATION		
Unilateral	8	Z=2.828, p=<0.001
Bilateral	0	

masticatory defects and aesthetic problems which will in turn adversely affect the psychological status of the child. So it's very important to know the prevalence of dental anomalies to prevent the complication in successor dentition.

The prevalence of dental anomalies in the primary dentition has been documented by many authors in their study in past. Nayak P et al (Jan 2011) reported the prevalence of dental anomalies in 500 school children aged 6 – 15 years of Jodhpur population and found the prevalence rate was 1.2%. In that dental anomalies in male (1.8%) were more prevalent than female (1.2%). Prevalence of fluorosis based enamel hypoplasia (18.8%) was more followed by mesiodens (0.6%), peg lateral (0.4%) and talon's cusp (0.2%). Gomes RR et al found that the prevalence of dental anomalies in primary dentition was 1.8%, in that double teeth

were most prevalent. Dental anomalies on the permanent teeth were found in 54.8% of the children with affected primary dentition.

To our best of knowledge, no study have been carried out regarding prevalence of dental anomalies in primary dentition school children aged 3-6 years of Gandhinagar city. Hence this study was done to document the prevalence of dental anomalies in primary dentition of school children aged 3-6 years of Gandhinagar city. In present study the discrepancy in dentition was checked with modified Kreiborg criteria.

MATERIALS AND METHODS

This cross-sectional survey was conducted in 800 school children aged 3-6 years of Gandhinagar city. Prior written permissions were taken from the Institutional ethical committee and school principal.

Sample:

To calculate a 95% confidence interval for p that is expected to be about 50% (0.50) with a margin of error (d) no more than 0.035, $n = (1.96^2)(0.50)(1-0.50)/(0.035^2)$. $n = 784$. By statistically analysing, the final sample size of this prevalence study came out to be 800. The children were selected based on following criteria.

Inclusion criteria:

1. Children aged between 3 – 6 years.
2. Children with a complete set of primary dentition without premature loss of primary teeth.
3. Children with no erupted permanent teeth.
4. Children with teeth free from caries.

Exclusion criteria:

1. School children whose principal did not give the permission/consent,
2. Exfoliation/extraction of any deciduous teeth.
3. Grossly decayed anterior teeth and molars.
4. Any physical, mental, & medical disability
5. Children with uncooperative behaviour

After getting approval from institutional ethical committee 8 schools were randomly selected in Gandhinagar city which were divided into four zones and after obtaining permission from the

school principal all 800 school children were examined by ADA Type-3 examination method.

Disparity in the dentition was checked according to modified Kreiborg criteria. In Kreiborg criteria² local microdontia, gemination, fusion, hyperdontia and hypodontia are included. In modification talon's cusp and developmental defects of enamel were included and gemination and fusion was recorded as double teeth. The developmental defects of enamel was recorded according to Modified DDE index in primary dentition according to its overall prevalence, distribution in gender, maxillary or mandibular arch and unilaterally or bilaterally occurrence.

RESULTS

Among 800 children only 49 had dental anomalies, which consist of 6.25% (Table 1). Prevalence of dental anomalies in boys (31) was more than girls (19), maxillary arch (39) was more involved than mandibular arch (27) ($P=0.0139$) and bilateral (32) presence was frequent than unilateral (20) (Table1). Developmental defects of enamel (33) was most common finding followed by local microdontia (8) and Double teeth (fusion) (8) (Graph 1). Rests of the dental anomalies were not found. DDE were prevalent more in male (19) than female (14) ($P=0.03$), maxillary arch (31) was more involved than mandibular arch (18) and bilateral (27) occurrence was more than unilateral (9) ($P=0.002$) (Table 2).

Local microdontia were more reported in males (5) than females (3), maxillary arch (6) was more prevalent than mandibular arch (3) (<0.001), and bilateral (5) involvement was more than unilateral (3) (<0.001) (Table 3). Double teeth (fusion) also had predilection for boys (7) than girls (1), mandibular arch (6) was commonly involved than maxillary arch (2) and only unilateral (8) presence was reported in studied population (0) ($P=<0.001$) (Table 4).

DISCUSSION

Various studies in past has reported prevalence of dental anomalies, in which lower prevalence rate was found by Nayak P et al¹ (1.2%), R.R Gomes et al² (1.8%), Shipa G et al⁶ (2.25%) as compared to

the present study which documented 6.125% prevalence.

The dental anomalies in most of the studies were recorded according to Modified Kreiborg criteria by adding Double teeth and Talon's cusp as modification^{6, 12}. In present study also we used the Modified Kreiborg criteria by adding Developmental defects of enamel, Double teeth and Talon's cusp to the original index, so that it can account for maximum forms of dental anomalies in the studied population. DDE was also included in our study as the dental anomalies because of its most frequent outcome as reported by R Ravindran et al (32%)¹³, Chauhan D et al (51.3%)¹⁴. DDE was found as the most common form of dental anomaly in our study (4.125%) also. Possible reason for the DDE could be malnutrition, low birth weight, premature delivery, maternal illness, systemic disease.

Dental anomalies often have their mark in permanent dentition. It is important to understand the cause of the anomalies because it will aid for intervention of the anomalies. A double tooth is associated with partial anodontia or supernumerary teeth in permanent dentition⁶. Talon's cusp can lead to dental caries and pulpal diseases¹. Local microdontia and Hyperdontia in primary dentition are also associated with anodontia, oligodontia or hyperdontia in permanent dentition which can lead to Malocclusion, Crossbite and various orthodontic problems¹².

Early diagnosis of dental anomalies forms mainstay of preventive aspect as studies by Shipa G et al⁶ and R R Gomes et al¹² have reported that the dental anomalies which were found in primary dentition were also associated with the permanent dentition. So, the early diagnosis of these dental anomalies will help prevent and intercept the future dental manifestation in permanent dentition.

CONCLUSION

There is a need for detailed and careful clinical examination in larger population and use of radiograph to determine the exact occurrence of dental anomalies in primary and permanent dentition and this type of study should be carried out in other population also because the prevalence of dental anomalies and their cause were found different in different geographic and ethnic group,

and by educating the parents about the dental anomalies will help to prevent and intercept the future complications.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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