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# Occlusal characteristics and prevalence of associated dental anomalies in the primary dentition

**Seema Lochib, K.R. Indushekar, Bhavna Gupta Saraf, Neha Sheoran, Divesh Sardana** *

*Department of Pediatric Dentistry, SRDC, Faridabad, India*

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**Abstract** *Introduction:* Morphological variations in primary dentition are of great concern to a pediatric dentist as it may pose clinical problems like dental caries, delayed exfoliation and also anomalies in the permanent dentition, such as impaction of successors, supernumerary teeth, permanent double teeth or aplasia of teeth. The present study was conducted to investigate the presence of dental anomalies in the primary dentition of 1000 schoolchildren in the 3—5 year-old age group in Faridabad.

*Materials and methods:* One-thousand schoolchildren were examined using Type III examination (WHO, 1997) for primary molar relationship, occlusal characteristics, primate spaces, physiological spaces and other anomalies of teeth, including number and morphology.

*Results and conclusions:* The prevalence of physiological spaces in maxillary and mandibular arches was 50.9% and 46.7%, respectively, whereas primate spaces were found in 61.7% of the children in the maxillary arch and 27.9% in the mandibular arch. The prevalence of unilateral anterior and posterior cross-bite was 0.1% and 0.8%, respectively, in the present study. The prevalence of hypodontia in the primary dentition was found to be 0.4% and the prevalence of fusion and gemination in the present study was 0.5%. Double teeth (fusion and gemination) and hypodontia were the most common dental anomalies found in the primary dentition in the present study.


## 1. Introduction

Occlusion in primary dentition plays a significant role in guiding the occlusion in succeeding permanent dentition [1,2]. The characteristic set of

* Corresponding author. Tel.: +91 9711886932.
*E-mail address:* doc_divesh@yahoo.co.in (D. Sardana).

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features in primary dentition to a large extent lays the foundation for proper eruption and alignment of the succeeding dentition. Based on the observation of these key features of occlusion in the child's dentoalveolar system during the formative years, the characteristics of the permanent dentition/occlusion can be predicted very well [3].

Morphological variations in primary dentition are of great concern to a pediatric dentist as they may pose clinical problems associated with them, including dental caries, delayed exfoliation, and also anomalies in the permanent dentition, such as impaction of successors, supernumerary teeth, permanent double teeth, or aplasia of teeth [4]. Thus, early diagnosis of these anomalies allows for more comprehensive long-term treatment planning, favorable prognosis and less extensive interception [5,6].

The occlusal traits in the primary dentition vary among different populations and ethnic groups [7]. Therefore, the present study was conducted on 1000 3—5 year-old schoolchildren attending school in Faridabad city to investigate the presence of dental anomalies in the primary dentition. The objectives of this study were to assess the characteristic features of occlusion in primary dentition with the following parameters:

- To assess the terminal molar relations on the right and left side of the jaw;
- To assess the presence of any anterior or posterior cross-bite;
- To assess the presence of scissor-bite;
- To assess the presence of infra-occlusion;
- To assess the presence of any other tooth anomalies, including number and morphology.

## 2. Materials and methods

The present study was conducted on 3—5 year-old school children in Faridabad city, Haryana. Ethical clearance was sought from the ethics committee of Sudha Rustagi College of Dental Sciences and Research, Faridabad, after explaining the aim and importance of the study. The training and calibration of the examiner was done under the guidance of a supervisor in the Department of Pedodontics, Sudha Rustagi College of Dental Sciences and Research, Faridabad, to limit the intra-examiner variability. The training and calibration was repeated until the examiner produced consistent results. The study was conducted on school premises after obtaining written permission from school authorities and written informed consent from parents that were distributed to children two days prior to the visit of the examiner.

The following criteria were used to select the children who participated in this study:

**Inclusion criteria of the study:**

1. Children with a complete set of primary dentition without premature loss of primary teeth.
2. Children with no erupted permanent teeth.
3. Children with teeth free from caries.
4. Children whose parents gave written informed consent.

**Exclusion criteria of the study:**

1. Grossly decayed anterior teeth and molars.
2. Children with any systemic disease.
3. Children with un-cooperative behavior.

The study was carried out in a classroom provided by the school authorities. The clinical examination was conducted in natural light using a mirror and a probe. The subjects were examined using Type III clinical examination (WHO, 1997), and observations were recorded. A total of 1000 children aged 3—5 years from selected schools finally formed the sample population.

The following parameters were recorded:

1. Primary molar relationship: The mesiodistal relationship between the distal surfaces of the upper and lower second deciduous molars were recorded according to the Baume (1950) classification:
   (a) Flush terminal plane
   (b) Distal step
   (c) Mesial step
   (d) Asymmetrical molar relation
2. Anterior cross-bite
3. Posterior cross-bite
4. Infra-occlusion
5. Scissors bite
6. Tooth anomalies: Presence of tooth anomaly was also recorded, i.e., Anodontia, Hypodontia, Oligodontia, Hyperdontia, Supplemental, Supernumerary, Transposition, Microdontia, Macrodontia, Fusion, Talon's cusp, Ectopic eruption, Dens evaginatus or any other.

The obtained data were coded and entered in Microsoft Excel which was then subjected to statistical analysis. Categorical data were analyzed by Chi-square test for differences between groups. Significance for all statistical tests was predetermined at a probability value of 0.05 or less (data were analyzed using the statistical package SPSS Software, Version 14, Chicago, USA).