

Original Research Article

# Eruption chronology of Primary Teeth in Garhwa district, Jharkhand, India


**K. Vinod<sup>1</sup>, Rohit Singh<sup>2\*</sup>, Rishi Suryavanshi<sup>2</sup>, Ashok Kumar<sup>3</sup>,  
Rahul Kumar Singh<sup>2</sup>, Rajeev Ranjan<sup>3</sup>**

<sup>1</sup>Professor and Head, Department of Orthodontics, Vananchal Dental College and Hospital, Garhwa, Jharkhand, India

<sup>2</sup>Senior Lecturer, Department of Pedodontics, Vananchal Dental College and Hospital, Garhwa, Jharkhand, India

<sup>3</sup>PG Student, Department of Pedodontics, Vananchal Dental College and Hospital, Garhwa, Jharkhand, India

\*Corresponding author email: [rohitpedo0604@gmail.com](mailto:rohitpedo0604@gmail.com)

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## Abstract

**Introduction:** Tooth eruption marks a milestone in a child's development and is synchronous with growth and development of the craniofacial complex. Thus, the present study was carried to evaluate the timing and sequence of eruption of deciduous teeth among children of India.

**Materials and methods:** The present study was carried out on 60 children (30 boys and 30 girls), aged between 5 till the emergence of II deciduous molar in the oral cavity, who were local residents, born and residing in that area and were visited regularly at monthly intervals at their homes. All the data were compiled and tabulated using the SPSS software package version 18. Comparison was made between the data obtained and the standard tooth eruption table. The Student t' test was used to assess the significance of difference in the mean age of tooth eruption with p value of <0.005 as significant value.

**Results:** Comparing the maxillary and mandibular arches, mandibular central incisor at  $8.85 \pm 1.05$  was the first tooth to erupt and maxillary second molar was erupted at  $28.12 \pm 1.5$  months were the last deciduous tooth to erupt in the oral cavity. Females showed delayed eruption compared to males in case of anterior teeth, and males showed delayed eruption in case of posterior deciduous teeth. Though the difference was not significant ( $p > 0.05$ ), there was a systematic tendency for early eruption of left sided primary teeth, though the difference was not significant.

**Conclusion:** The present study found delay in eruption. Hence, studies conducted to evaluate time to time estimation of variation of eruption sequence among different populations is important for general dental practitioners, and pediatric dentists to contend with the anxiety of the parents.

## Key words

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Eruption, Primary teeth, Chronology.

## Introduction

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Emergence of first tooth in the oral cavity is very important and exciting event for parents in the child's development, and they have often showed their concern about the timing of eruption of teeth. However, it has been suggested in the literature that standards for Appearance of tooth should be derived from the population in which they are to be applied because factors related to emergence may vary considerably in both dentitions and BMI [1].

Tooth eruption marks a milestone in a child's development and is synchronous with growth and development of the craniofacial complex. Estimation of dental age is an important tool for planning treatment and forms a valuable asset in diagnosis and treatment planning during the developmental years [2]. Thus, the present study was carried to evaluate the timing and sequence of eruption of deciduous teeth among children of Garhwa, Jharkhand, India.

## Materials and methods

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The present study was carried out on 60 children (30 boys and 30 girls), aged between 5 till the emergence of II deciduous molar in the oral cavity, who were local residents, born and residing in that area and were visited regularly at monthly intervals at their homes. Data were obtained from the health care centre, Garhwa, Jharkhand regarding the age and address of the children. Ethical Committee Clearance was obtained from the Institutional Ethics Committee. Permission was obtained from the medical officer in-charge before the initiation of the study. Informed consent from parents or guardian was also obtained before examination. Children with any developmental disorder or suffering from any medical illness were excluded

from the study. During the visits at home, oral cavity of the child enrolled in the study was examined and details were noted. Parents and care takers were counseled regarding care of the teeth. All the data were compiled and tabulated using the SPSS software package version 18. Comparison was made between the data obtained and the standard tooth eruption table. The Student t' test was used to assess the significance of difference in the mean age of tooth eruption with p value of <0.005 as significant value.

## Results

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The present study found that earliest primary tooth to emerge in the oral cavity was mandibular central incisor, followed by maxillary central incisor, then maxillary lateral incisor, mandibular lateral incisor, maxillary first molar, mandibular first molar, maxillary canine, mandibular canine, mandibular second molar and lastly maxillary molar (**Table - 1**).

There was no significant intra-arch difference found between the two sides in either of the arches as p value was seen > 0.05. A comparison of eruption age of teeth in maxillary and mandibular arch was done using Student's t test. Comparing the maxillary and mandibular arches, mandibular central incisor at  $8.85 \pm 1.05$  was the first tooth to erupt and maxillary second molar was erupted at  $28.12 \pm 1.5$  months were the last deciduous tooth to erupt in the oral cavity. Females showed delayed eruption compared to males in case of anterior teeth, and males showed delayed eruption in case of posterior deciduous teeth. Though the difference was not significant ( $p > 0.05$ ), there was a systematic tendency for early eruption of left sided primary teeth, though the difference was not significant.

**Table – 1:** Eruption chronology with age for Primary Teeth.

Tooth	Maxilla (Months)				Mandible (Months)			
	Right side		Left side		Right side		Left side	
	Male Child	Female Child	Male Child	Female Child	Male Child	Female Child	Male Child	Female Child
<b>Central Incisor</b>	10.4± 0.91	9.91± 0.45	9.89± 0.58	9.97± 0.49	8.85± 1.05	9.89± 0.59	9.45± 0.58	9.55± 0.39
<b>Lateral Incisor</b>	11.38± 0.55	12.35± 0.39	11.46± 1.03	12.17± 0.65	13.25± 0.84	13.97± 0.53	13.59± 0.49	13.89± 0.57
<b>Canine</b>	19.14± 1.22	20.27± 0.93	20.03± 1.03	19.50± 1.22	22.12± 0.45	23.12± 0.26	21.17± 0.48	22.89± 0.57
<b>First Molar</b>	15.05± 1.32	15.61± 1.21	16.08± 1.22	15.59± 1.04	17.03± 1.03	16.54± 1.07	17.54± 0.34	15.48± 0.45
<b>Second Molar</b>	28.12± 1.5	26.91± 0.58	28.56± 0.83	27.12± 1.6	25.79± 0.85	26.48± 1.1	27.18± 1.3	26.16± 0.45

## Discussion

Dental eruption begins with the eruption of the first primary teeth around 6 months and finishes at 2 years and a half for primary teeth, and around 18 – 25 years for permanent teeth, when the third molar erupts. The teeth's eruption and development is, usually, related to the child's chronological age, but there can also be some discordances as we refer to a precocious eruption or, on the contrary, to a delayed one [3]. The present study found that the age of emergence of first tooth was around  $8.85 \pm 1.05$  and age of eruption of last deciduous tooth was  $28.12 \pm 1.5$  months. Similar to present study, Kohli MV, et al. [4] found delay in eruption of teeth in present generation, for girls, it occurs at age of 7.88 months and for boys, it occurs at the age of 8.08 months. Variation in the chronology of eruption has been studied extensively. Most studies attribute the differences to influential factors such as nutrition, socio-economic status, climate, and environmental factors such as fluoride content in drinking water [5].

Most of the earlier studies in European populations found differences in the pattern of deciduous tooth emergence in both different genders. These studies have found that in case of male children, anterior dentition develops earlier as compared to the female dentition,

however the pattern shows reverse phenomenon in emergence of the posterior deciduous dentition, in which posterior teeth emerges early in female [6]. The results of the present study found similar pattern in observed population. Gunashekar M, et al. [7] conducted a longitudinal study of age and order of eruption of primary teeth in Indian children in Hyderabad and found that boys showed tendency towards earlier eruption for all teeth except maxillary second molar and maxillary/ mandibular first molars which erupted earlier in girls. Comparison between maxillary and mandibular showed a tendency to earlier mandibular eruption of central incisors, lateral incisors and second molars in both genders. The present study found that earliest primary tooth to emerge in the oral cavity was mandibular central incisor, followed by maxillary central incisor, then maxillary lateral incisor, mandibular lateral incisor, maxillary first molar, mandibular first molar, maxillary canine, mandibular canine, mandibular second molar and lastly maxillary molar.

Kuldeep S, et al. [8] found that the mean age of eruption of first tooth i.e. central incisors of lower jaw was  $8.28 \pm 0.84$  months and second molars of upper and lower jaw erupted at the mean age of  $27.72 \pm 3.36$  months. Poureslami H, et al. [9] investigated the relationship between

the eruption time of first primary and permanent teeth and the variation in the eruption time considering socioeconomic status (SES) and concluded that the eruption timing for the first primary tooth had a correlation with the first permanent tooth eruption timing, while SES did not have any influence on eruption times. Dahiya BR, et al. [1] conducted a study to find out average age from eruption of teeth and revealed that in most cases the permanent teeth erupted earlier in the females than males and that the eruption of teeth was earlier in mandible than in maxilla and are consistent with age and BMI.

Information on tooth emergence is the key indicator of maturity in the diagnosis of certain growth disturbances, and in estimating the chronological age of children with unknown birth records in forensic dentistry. Moreover, variations in the timing of the eruption are a major concern for parents [9].

## **Conclusion**

Comparing the maxillary and mandibular arches, mandibular central incisor at  $8.85 \pm 1.05$  was the first tooth to erupt and maxillary second molar erupted at  $28.12 \pm 1.5$  months were the last deciduous tooth to erupt in the oral cavity. Hence, studies conducted to evaluate time to time estimation of variation of eruption sequence among different populations is important for general dental practitioners, and pediatric dentists to contend with the anxiety of the parents.

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