

## Original Article

### Gender Differences in the Eruption Time of Permanent Teeth in School Going Children: A Clinical Study

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#### ABSTRACT:

**Background:** Eruption of teeth is a biological process that is intimately related to the growth and development of the child. The present study was conducted to determine gender differences in the eruption time of permanent teeth in children. **Materials & Methods:** The present study was conducted on 258 children, aged 6-17 years of both genders. In all subjects, Basic information including name, date of birth, age, gender, address was recorded. Clinical oral examination was performed on a dental chair and absence/presence of each permanent tooth was recorded. **Results:** Maximum children were in 14 years of age which consisted of 10 males and 15 females. There was significant difference in the mean eruption time of maxillary and mandibular canine and mandibular first premolar between males and females. **Conclusion:** It was found that eruption of maxillary central incisor, mandibular central incisor, maxillary first molar and mandibular first molar was earlier in males as compared to females. However, eruption of all other teeth was earlier in females when compared with females.

**Key words:** Children, Eruption, Teeth.

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#### INTRODUCTION

The age at which a tooth erupts in the oral cavity is of particular significance. Eruption of dentition is a biological process that is intimately related to the growth and development of the child and is defined as the movement of the tooth from its position within the alveolar process to a functional situation in the oral cavity.<sup>1</sup> Tooth eruption may be affected by many factors, such as gender, race, height, weight, or socioeconomic status, many of which have been the subject of research. One of the criteria used to evaluate dental maturity is the chronology and sequence of eruption.<sup>2</sup>

Accurate and detailed information regarding the timing of dental eruption is needed to monitor occlusal development, diagnose malocclusion and efficiently plan the dental treatment of children and adolescents in Pediatric Dentistry and Orthodontics. Information related to tooth eruption is also used to supplement other maturity indicators

in the diagnosis of certain growth disturbances, and in forensic dentistry to estimate the chronological age of children with unknown birth records.<sup>3</sup> It has been suggested that the metabolic activity within the periodontal ligament may play a role, particularly for the post-emergent stage of eruption. Human growth hormone (HGH) is known to affect growth and tooth eruption and it has been suggested that the periodontal ligament is influenced by a diurnal-nocturnal rhythm in HGH secretion.<sup>4</sup> The present study was conducted to determine gender differences in the time of eruption of permanent teeth in children.

#### MATERIALS & METHODS

The present study was conducted in the department of Paedodontics and Preventive Dentistry. It comprised of 258 healthy children, aged between 6-17 years of both genders. The study was approved from the institutional ethical committee. All the parents of children were in-

formed regarding the study and written consent was obtained. Children with special health care needs were excluded from the study.

Basic Information including name, date of birth, gender, address of the subjects was recorded on a case history form. The age of a child was calculated from his/her date of birth to the child’s last birthday. Clinical oral examination was performed on a dental chair and absence/presence of each permanent tooth was recorded. Permanent teeth were scored according to clinical eruption stage. Each tooth was classified as either “not erupted” or “erupted. If any part of the tooth has been emerged through the gingiva or was visible in the oral cavity, it was considered as erupted. Results thus obtained were subjected to statistical analysis. p value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of subjects**

Age (years)	Male	Female	Total
6	8	10	18
7	7	11	17
8	9	15	24
9	10	9	19
10	12	10	22
11	6	17	23
12	7	14	21
13	9	12	21
14	10	15	25
15	12	12	24
16	7	16	23
17	5	15	20
Total	102	156	258

Table I shows that maximum study subjects were 14 years of age which consisted of 10 males and 15 females, followed by 8 years and 15 years each having 24 children.

**Table II Mean eruption time of permanent teeth in males and females (months)**

Teeth	Male	Female	P value
Maxillary Central Incisor	86.2	87.4	0.81
Mandibular Central Incisor	77.4	78.5	0.23
Maxillary Lateral Incisor	104.2	102.6	0.41
Mandibular Lateral Incisor	88.2	87.4	0.98
Maxillary Canine	134.2	121.4	0.05
Mandibular Canine	125.2	119.4	0.04
Maxillary First Premolar	119.0	116.2	0.91
Mandibular First Premolar	124.2	114.3	0.01
Maxillary Second Premolar	122.5	118.5	0.51
Mandibular Second Premolar	126.3	125.5	0.42
Maxillary First Molar	77.2	78.1	0.12
Mandibular First Molar	78.3	79.4	0.52
Maxillary Second Molar	129.3	125.4	0.11
Mandibular Second Molar	131.2	130.5	0.71

Table II shows that there was significant difference in the mean eruption time of maxillary and mandibular canines

and mandibular first premolar between males and females (p value<0.05)

**DISCUSSION**

The normal eruption of permanent teeth into the oral cavity occurs over a broad chronologic age range. Factors that have been shown to exert an influence on eruption patterns include sex, ethnicity, geography, hereditary and hormonal factors, socioeconomic status, nutrition and caries status.<sup>5</sup> The present study was conducted to determine the gender differences in the time of eruption of permanent teeth in children.

We found that maximum children were in 14 years of age which consisted of 10 males and 15 females followed by 8 years and 15 years having 24 children each. Virtanen et al<sup>6</sup> found that eruption tended to be earlier in females than in males, but this difference was significant only for maxillary and mandibular canines and mandibular first premolars. For both females and males, the first teeth to erupt were the central incisors and first molars, and the last to erupt were the second premolars, molars and canines. Mandibular incisors and canines erupted significantly earlier than their maxillary counterparts in both females and males.

We observed that mean eruption of maxillary central incisor in males was 86.2 and in females was 87.4, mandibular central incisor was 77.4 in males and 78.5 in females, maxillary lateral incisor was 104.2 in males and 102.6 in females, mandibular lateral incisor was 88.2 in males and 87.4 in females, maxillary canine was 134.2 in males and 121.4 in females, mandibular canine was 125.2 in males and 119.4 in females, maxillary first premolar was 119 in males and 116.2 in females, mandibular first premolar was 124.2 in males and 114.3 in females, maxillary second premolar was 122.5 in males and 118.5 in females, mandibular second premolar was 126.3 in males and 125.5 in females, maxillary first molar was 77.2 in males and 78.1 in females, mandibular first molar was 78.3 in males and 79.4 in females, maxillary second molar was 129.3 in males and 125.4 in females and mandibular second molar was 131.2 in males and 130.5 in females. There was significant difference in eruption of maxillary and mandibular canine and mandibular first premolar (p value< 0.05). This is in accordance with Manji et al study on the estimation of median age of eruption of permanent teeth in Kenyan African children.<sup>7</sup>

We found that eruption sequence in males was earlier for maxillary central incisor, mandibular central incisor, maxillary first molar and mandibular first molar. In all other teeth, females showed earlier eruption of teeth. Saleem et al<sup>8</sup> found that permanent teeth eruption occurred between 6.99 and 12.45 years in girls and between 7.06 and 12.81 years in boys. Overall we found no statistically significant differences in the timing of emergence between homologous contralateral teeth, however we noted that the mandibular teeth erupt before those of the maxillary arch and the eruption of permanent teeth occurs earlier in girls than in boys. The sequence of tooth eruption differed in both jaws but was the same in both genders. Many interceptive orthodontic procedures depend

upon a specific order of eruption. For example, in cases of crowding in the maxilla, emergence of the first premolar before the canine would favour interceptive extraction of the first premolar.<sup>9</sup>

### CONCLUSION

In our study, it was found that eruption of maxillary central incisor, mandibular central incisor, maxillary first molar and mandibular first molar was earlier in males as compared to females. However, eruption of all other teeth was earlier in females when compared with females.

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