

# The Prevalence of Premature Loss of Primary Molars Among Children Who Attended College of Dentistry/Hillah City, Iraq

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## ABSTRACT

**Background:** Early tooth loss can compromise the integrity of the arch length required for subsequent permanent teeth, causing crowding, rotation, and impaction of the permanent teeth. **Objective:** The objective of this study is to assess the frequency of early primary molar loss at the dentistry college in Hillah, Iraq. **Materials and Methods:** An experienced examiner performed each clinical examination while using the proper illumination. For the study, a total of 206 children (84 boys and 122 girls) between the ages of 5 and 10 were chosen. Age and tooth loss were among the information gathered. The acquired data were then subjected to statistical analysis. All statistical calculations are made using the SPSS version 26 software. The Pearson chi-squared test and Cramer  $V$  test are used to assess categorical variables, which are provided as absolute numbers and percentages.  $P$  values lower than 0.05 were regarded as significant. **Result:** The study found that in the sample, 69.83% had early loss of primary teeth with girls having a higher incidence of primary tooth loss than boys (59.2%). Both first and second molars are affected with premature loss equally. Premature tooth loss was significant in the mandibular left side (36.9%). **Conclusion:** Early primary tooth loss was shown to be more common significantly in girls when compared to boys. The left mandibular tooth was most commonly affected, then right side followed by maxillary right and left side sequentially. First and second molars are equally affected with premature loss.

**Keywords:** Children, premature loss, prevalence, primary molars

## INTRODUCTION

Premature loss means primary tooth loss before the exfoliation time. Away from its obvious eating function, the primary dentition also serves as a guide for the eruption of permanent teeth. It also helps with digestion and phonation by stimulating jaw growth. The appropriate development of permanent dental arches begins with primary dental arches.<sup>[1]</sup>

There are a number of instances that occurs during the period of growth of deciduous dentition and change over to permanent dentitions that are regarded as normal and typical. On the other hand, early loss of primary teeth may have adverse effects on both dentitions and disrupt the stomatognathic system's regular course of development.<sup>[1]</sup>

One of the major causes of tooth loss in children worldwide is the dental caries. According to previous findings, there are a variety of causes for the early loss of primary teeth.<sup>[2,3]</sup> Law<sup>[2]</sup> states that trauma and severe early

childhood caries promote early loss of primary incisors. Severe crowding is typically the cause of premature canine loss. With the ectopic emergence of permanent lateral incisors, this crowding hastens the resorption of primary canine roots. The main cause of premature primary molar loss is severe caries.<sup>[4]</sup>

Dentists also select primary extraction for a variety of reasons, such as complete coronal damage or a tooth that is highly decayed, it is preferable to have it restored only once.<sup>[5]</sup> It can also be because the parents are ignorant

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of the impacts of early deciduous tooth loss and how to restore primary teeth.<sup>[6]</sup>

Early loss of deciduous molars may impede or even stop the eruption of permanent bicuspid. Therefore, space maintainers must be offered to prevent long-term bicuspid impaction. This study sought to ascertain the frequency of early primary molar loss in children enrolled in Babylon University's dental school in Iraq (ages 5–10).

## MATERIALS AND METHODS

This research was carried out at the College of Dentistry/ University of Babylon during the period between the beginning of December 2021 till the end of March 2022. The total sample size was 206 children of which 84 were boys and 122 were girls, who were between 5 and 10 years, and they had a premature loss of primary molars. The children who were excluded from the study are the children aged larger than 10 years old, children with systemic disease, children with special health care need as well as uncooperative children.

To achieve subject without obligation, a special consent was prepared and given to parents of children to get permission for including their children in the study with full cooperation.

### Ethical approval

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before the sample was taken. The study protocol, subject information, and consent forms were reviewed and approved by a local ethics committee according to the document number 156 (including the number and the dated September 16, 2021) to get this approval. This study was reviewed and approved by the Central Committee for Scientific Research Ethics.

## Oral examination

Pediatric dentist was performed the oral examination between the hour of 10 and 12 am. Each child was asked to set on the dental chair in an appropriate position. The dentist used WHO probe, dental mirror with proper lighting during the examination.<sup>[7]</sup>

Premature primary tooth loss was considered when the primary tooth loss occurred at 12 months earlier than the chronological eruption time of succedaneous teeth.<sup>[8]</sup>

## Statistical analysis

All statistical analysis is calculated by using Statistical Package for Social Studies (SPSS, IBM Company, Chicago, IL 60606, USA). Pearson's chi-squared test and Cramer's *V* test are used to assess categorical variables, which are provided as absolute numbers and percentages. *P* values lower than 0.05 were regarded as significant.

## RESULTS

The results revealed that there were 206 children who had premature loss; the number of boys was 84 and the number of girls was 122. The prevalence of premature loss in primary molars was high (69.83%). The distribution of early deciduous tooth loss across different age and gender groups is shown in Table 1. It was found that early deciduous tooth loss was more common in girls than in boys, and this difference was statistically significant (*P* = 0.03).

Table 2 and Figure 1 demonstrate the distribution of early deciduous tooth loss by a group of teeth. The result was insignificantly different between the first and second molars.

Table 3 and Figure 2 display the distribution of early molar teeth loss according to dental arch and sides, which

**Table 1: Distribution of premature tooth loss across different age groups and genders**

Gender	Age groups (years)				P value
	5–6	7–8	9–10	Total	
Boy/N (%)	14 (25.9%)	48 (46.2%)	22 (45.8%)	84 (40.8%)	*0.035
Girl/N (%)	40 (74.1%)	56 (53.8%)	26 (54.2%)	122 (59.2%)	
Total	54 (100%)	104 (100%)	48 (100%)	206 (100%)	

\*Chi-square test

**Table 2: Distribution of premature deciduous tooth loss by a group of teeth**

Dental group	Gender			P value
	Boys	Girls	Total	
First molar/N (%)	9 (46.4%)	64 (52.5%)	103 (50%)	*0.395
Second molar/N (%)	45 (53.6%)	58 (47.5%)	103 (50%)	
Total	84 (100%)	122 (100%)	206 (100%)	

\*Chi-square test

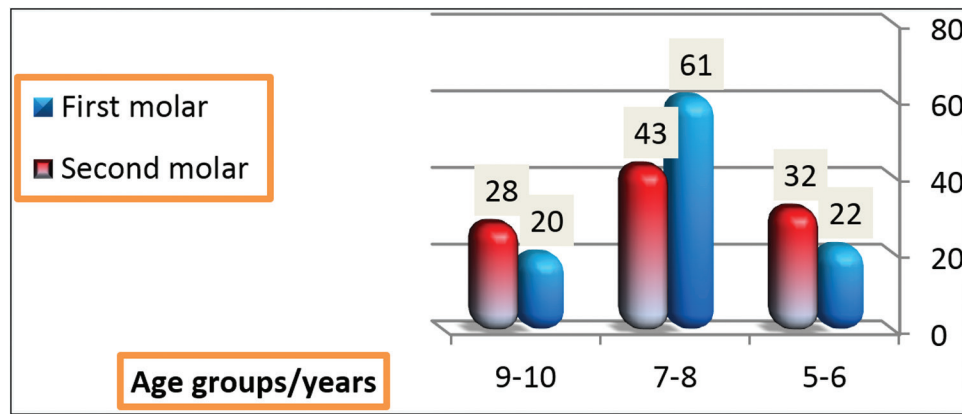


Figure 1: Distribution of premature loss among the age group

Table 3: Distribution of early deciduous tooth loss by arch and side

Arch involved	Gender			P value
	Boys	Girls	Total	
Mandibular right/N (%)	35 (41.7%)	38 (31.1%)	73 (35.4%)	*0.066
Mandibular left/N (%)	34 (40.5%)	42 (34.4%)	76 (36.9%)	
Maxillary right/N (%)	9 (10.7%)	22 (18%)	31 (15%)	
Maxillary left/N (%)	6 (7.1%)	20 (16.4%)	26 (12.6%)	
Total	84 (100%)	122 (100%)	206 (100%)	

\*Chi-square test

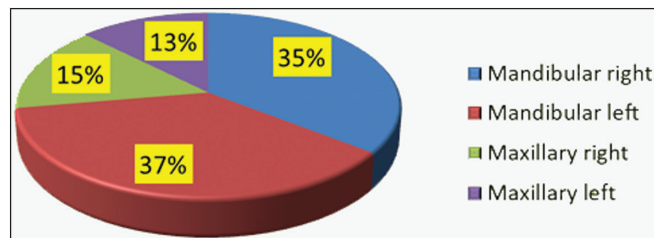


Figure 2: Distribution of premature loss based on dental arches figure

Table 4: The relationship between early primary molar loss and age groups

Parameters	Value	*P value
Premature loss of primary teeth-age groups	0.175	0.043

\*Cramer's V test

reveals that 15% on maxillary right side, 13% on maxillary left side, 37% on left mandibular molars, and 35% on mandibular right side.

The early premature loss of primary teeth was correlated with age group by a weak (0.175) [Table 4].

## DISCUSSION

In this study, children who attended College of Dentistry, Babylon University had a significant prevalence of tooth loss in the primary dentition (69.83%); clinical and behavioral characteristics are linked to this loss, and this

study demonstrated that tooth loss in this group was a serious public health issue.

The frequency of early tooth loss has only been looked at in a few research. Premature primary dentition loss affects 51% of Saudi Arabia's population,<sup>[8]</sup> whereas it ranges from 1.56% to 13.62% in Iran.<sup>[9]</sup>

Decisions were made based on clinician judgment, and these differences in results may be related to different treatment modalities and different study age groups.<sup>[10]</sup>

The preservation of primary teeth until normal exfoliation is one of the most crucial components of preventative and interceptive dentistry. Dental care or treatment of children with primary dentition is likely to be a low priority for parents and guardians because of the "temporary" nature of these teeth. Parents may not seek treatment for their children due to the costly dental treatment, especially parents with low socioeconomic class, so for any dental pain experience, they prefer extraction.<sup>[11,12]</sup>

In comparison to boys (40.8%), girls had a higher prevalence (59.2%), and the results were statistically significant. This conclusion was reached after data collection showed that more girls than boys attended the College of Dentistry, so a higher percentage of girls had premature loss.

The chewing process is significantly aided by the molar teeth. The results of Jayachandar *et al.*<sup>[13]</sup> and the findings of the present study are comparable, in that the first and

second molars were equally affected in this inquiry. It is probable that because clinicians choose to extract this tooth due to endodontic treatments are less successful on it. Furthermore, the fissured occlusal surfaces and concave proximal surfaces of the primary molars contribute to the greater affinity of *Streptococcus mutans* for those teeth. This will ultimately result in dental caries, which will force the primary molars to be removed and cause the early loss of the primary teeth.<sup>[12]</sup>

There is a weak correlation between early premature primary tooth loss among age groups in our study, which agrees with Jayachandar *et al.*<sup>[13]</sup> The maxillary arch has a significantly lower rate of early deciduous tooth loss than the mandibular arch, which was also found in Kelner *et al.*<sup>[14]</sup> and Cavalcanti *et al.*<sup>[15]</sup> This is related to abundant saliva supply which provides anticariogenic effect to the maxillary posteriors teeth, whereas the mandibular posteriors teeth surfaces are more prone to plaque accumulation; therefore, the mandibular posteriors have an increased risk of tooth decay.

However, children with poor oral health cause a premature loss of teeth which worsen the quality of children's life,<sup>[16]</sup> which then causes a malocclusion that consequently may require orthodontic treatment.<sup>[17]</sup>

## CONCLUSION

We can conclude from this study that early primary tooth loss is more common in girls than in boys. The mandibular teeth were the most commonly affected; the first and second molars are equally distributed of premature loss. Most teeth were lost on the left side of both jaws rather than on the right side.

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## Conflicts of interest

There are no conflicts of interest.

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