

# Gender Differences for Deciduous Molar Sizes in Children of Jammu City

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## Abstract

**Aim:** The aim of this study is to determine the gender differences for the size of deciduous molars in children of Jammu city.

**Materials and Methods:** Of 893 children with age ranging from 6 to 11 years who visited the Department of Pediatric and Preventive Dentistry in Indira Gandhi Government Dental College, Jammu, from July 2016 to October 2016, 100 children were selected based on the inclusion criteria which were further divided into two groups. Group I included 50 males and Group II included 50 females. All the selected samples were initially subjected to oral prophylaxis, impressions were made with alginate, and casts were pored immediately with dental stone and the study models were prepared. The models thus obtained were finished and numbered for ease of identification. Electronic digital caliper calibrated to the nearest 0.01 mm was used to measure the mesiodistal and buccolingual dimensions of primary molars (both D and E) following the evaluation criteria. The evaluated result was then subjected to statistical analyses.

**Results:** The mean dimension of upper first molar is 6.29mm, and in females, it is 6.27 mm. The mean buccolingual measurement for upper first molar in males is 8.77 mm and in females is 8.64 mm. The mean mesiodistal measurement for the upper second molars is 8.57 mm in males and 8.66 mm in females. Their mean buccolingual measurement was 9.71 mm in males and 9.70 mm in females. The mean dimension of lower first molar is 7.49 mm, and in females, it is 7.37 mm. The mean buccolingual measurement for lower first molar in males is 7.78 mm and in females is 7.46 mm. The mean mesiodistal measurement for the lower second molars is 9.52 mm in males and 9.27 mm in females. The mean buccolingual measurement in males was 9.11 mm and 8.78 in females.

**Conclusion:** The dimensions of primary molars are slightly larger in males in comparison to females. The data about these measurements have an anthropological significance to differentiate various genders in different populations.

**Key words:** Occlusion, Deciduous molars, Gender, Measurements, Dimorphism

## INTRODUCTION

Deciduous teeth, forming from the first trimester until about 3 years of age, are a record of prenatal development. They also express genetic traits and may reflect environmental effects including maternal health, childhood disease, and nutrition.<sup>[1]</sup>

Deciduous teeth erupt until about 30 months of age, and their replacement begins around 6 years of age, being completed by around 12 years of age.<sup>[2,3]</sup>

Primary teeth play an important role in growth and development of children. Attempts to maintain the primary teeth until the eruption of their permanent successors have resulted in the introduction of many restorative materials and techniques.<sup>[4,5]</sup>

Tooth size provides a perception of connection between populations and environmental adaptation. The relationship between tooth size and dental crowding is reported by researchers as being an important factor in clinical practice.<sup>[6-11]</sup>

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Tooth size in humans is determined by polygenic genetic factors. The environmental influences include particularly the socioeconomic conditions, ethnicity, nutrition, childhood health, and maternal aspects such as gestational conditions and systemic factors.<sup>[7]</sup>

The aim of the present study is to determine the gender differences for the size of deciduous molars in children of Jammu city.

## MATERIALS AND METHODS

Of 893 children with age ranging from 6 to 11 years who visited the Department of Pediatric and Preventive Dentistry in Indira Gandhi Government Dental College, Jammu, from July 2016 to October 2016, 100 children were selected based on the inclusion criteria which were further divided into two groups. Group I included 50 males and Group II included 50 females.

### Inclusion Criteria

The following criteria were included in the study:

- Children residing in Jammu city.
- Same ethnicity of ancestors.
- Fully erupted, sound and caries free deciduous molars.

### Exclusion Criteria

The following criteria were excluded from the study:

- Anomalies of tooth size and shape.
- Partially erupted deciduous molars.
- Carious deciduous molars.
- Restored deciduous molars.

All the selected samples were initially subjected to oral prophylaxis, impressions were made with alginate, and casts were pored immediately with dental stone and the study models were prepared. The models thus obtained were finished and numbered for ease of identification. Electronic digital caliper calibrated to the nearest 0.01 mm was used to measure the mesiodistal and buccolingual dimensions of primary molars (both D and E) following the evaluation criteria put forth by Barbería *et al.*<sup>[12]</sup>

- Mesiodistal measurement: The distance between the mesial and distal points of contact measured with the caliper placed parallel to the occlusal surface.
- Buccolingual measurement: The maximum width between the buccal and lingual surfaces measured with a digital caliper placed perpendicular to the mesiodistal size.

All the measurements were noted by a single examiner and the values thus obtained were tabulated and subjected to statistical analysis using the statistical package for social sciences SPSS version 20.0.

## RESULTS

Table 1 presents that the mean dimension of upper first molar is 6.29 mm, and in females, it is 6.27 mm. The mean buccolingual measurement for upper first molar in males is 8.77 mm and in females is 8.64 mm. The mean mesiodistal measurement for the upper second molars is 8.57 mm in males and 8.66 mm in females. Their mean buccolingual measurement was 9.71 mm in males and 9.70 mm in females. The gender differences between the mean buccolingual and mesiodistal measurements were statistically insignificant.

Table 2 summarized that the mean dimension of lower first molar is 7.49 mm, and in females, it is 7.37 mm. The mean buccolingual measurement for lower first molar in males is 7.78 mm and in females is 7.46 mm. The mean mesiodistal measurement for the lower second molars is 9.52 mm in males and 9.27 mm in females. The mean buccolingual measurement in males was 9.11 mm, which is slightly larger in comparison to mean buccolingual dimension in females (8.78 mm). However, the gender differences between the mean buccolingual and mesiodistal measurements were statistically insignificant.

## DISCUSSION

The study was conducted in 893 children with age ranging from 6 to 11 years who visited the Department of Pediatric and Preventive Dentistry in Indira Gandhi Government Dental College, Jammu, from July 2016 to October 2016,

**Table 1: Mean sizes of deciduous upper molars among different groups**

Tooth	Dimension	Group I 50 males		Group II 50 females		P
		X	SD	X	SD	
		Upper first molar	MD	6.29	0.43	
	BL	8.77	0.53	8.64	0.45	
Upper second molar	MD	8.57	0.69	8.66	0.54	1.2629
	BL	9.71	0.46	9.70	0.46	

SD: Standard deviation

**Table 2: Mean sizes of deciduous lower molars among different groups**

Tooth	Dimension	Group I 50 males		Group II 50 females		P
		X	SD	X	SD	
		Lower first molar	MD	7.49	0.43	
	BL	7.78	0.56	7.46	0.61	
Lower second molar	MD	9.52	0.53	9.27	0.62	1.3057
	BL	9.11	0.55	8.78	0.41	

SD: Standard deviation

further 100 children were selected based on the inclusion criteria which were further divided into two groups. The findings of our study showed that the mesiodistal dimension of mandibular teeth is larger in comparison to maxillary counterparts. Similar is the case with buccolingual dimensions of maxillary teeth in comparison to their mandibular counterparts. These results are in accordance with the various studies done in the past.<sup>[7,11-17]</sup>

The present study showed that the males had slightly larger molar dimensions as compared to females; however, the results were statistically insignificant. Similar results were concluded by Yuen *et al.*,<sup>[18]</sup> in Chinese population and Barberia *et al.*,<sup>[12]</sup> in Spanish White children. However, Margetts and Brown<sup>[7]</sup> found a significant dimorphism in mandibular primary molars which is in contradiction with the results of our study.

According to the results of the present study, the maxillary and mandibular primary first molar measurements were more stable when compared to second primary molar measurements which are in accordance with the studies done in various other populations of Spanish, Australian, and Brazilian origin.<sup>[12,16,19]</sup>

The limitation of our study is that antimeric (right and left) teeth comparison has not been considered. Furthermore, the sample size was limited and various ethnicity of Jammu and Kashmir population could have been considered for more appropriate measurements.

## CONCLUSION

It can be concluded that the dimensions of primary molars are slightly larger in males in comparison to females. The data about these measurements have an anthropological significance to differentiate various genders in different

populations and may help to understand the development of occlusal system and associated malocclusions.

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