

# Prevalence of Midline Diastema among Rama University students, Kanpur

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## Abstract

Maxillary midline diastema is one of the common esthetic problems appearing in deciduous dentition and affecting adults. This study is aimed at determining the prevalence of midline diastema among a sample of Rama University students in Kanpur city.

**Materials and Methods:** A cross sectional descriptive study was carried out for 2200(1700females, 500males) Rama university students, 18-25years old.

**Results:** The prevalence of midline diastema was recorded 7.5% (7.1%maxillary, 0.3% mandibular and 0.2% both maxillary and mandible). It occurs more frequently in females (8.2%) than male (4.9%).

**Conclusion:** The study reveals prevalence of midline diastema in the sample. The result gives evidence regarding the prevalence of the midline diastema in Rama University students.

**Keywords:** Midline Diastema, University Students, Maxillary incisors, Orthodontic,

## Introduction

Midline diastema is dent alveolar disorders that cause special concern to patients [1]. It is defined as anterior midline spacing greater than 0.5 mm between the proximal surfaces of adjacent teeth [2]. Nainar defined true midline diastema as one without periodontal/periodical involvement and with the presence of all anterior teeth in the arch [3].The presence of midline diastema in early mixed dentition is normal condition appears in 48.8% of children and decrease with age [4, 5].

Mandibular midline diastema occurred more in male (90.9%) than female (9.1%), in contrast maxillary midline diastema occurred more in females (65.3%) than males (34.7%) [6].

The etiological factor of midline diastema is a multifactorial phenomenon [3, 7, 8, and 9]. It occurs as results of dental defect such as abnormality in the size, shape or number of teeth, periodontal defect; hypertrophic fibrous fermium or muscular defect in the size of tongue [7]. A possible genetic basis as well as environmental factors is suggested [9]

Midline diastema can be diagnosed by dental history, radiographs, clinical examination and tooth size evaluation [10].Worldwide numerous studies on the prevalence and etiological factors of midline diastema had been conducted among different populations [11, 12, 13, 14].So, the present study was designed to identify the prevalence of midline diastema among a sample of Rama University students, since no studies have been conducted regarding this till date.

## Materials & Methods

This cross-sectional study was carried out to determine the prevalence of midline diastema among students of the Rama University, Kanpur. This University has students from different ethnic backgrounds and is well populated with students and for this reason they were selected for this study. First permission and approval was obtained from the Rama University ethical committee, to carry out this study.

## Sample Size

The target population was found to be 4000students from which the sample size was extracted. The sample size was calculated according to be 2200.

A list of the attending university students was obtained and students were randomly selected. This study only took into account the Rama University, Kanpur male and female students who agreed to participate in the study. The exclusion criteria included the students that didn't agree to participate, previous or undergoing orthodontic or prosthodontic treatment, and students with loss of anterior teeth material due to caries, attrition, fracture or any congenital defect and students with history of restoration or loss of anterior teeth. 4000 students (were randomly selected and approached). Each student was informed about the aims, advantages and process of the study. Verbal and/or written consent forms were being taken from students who agreed to participate. Students then underwent analysis for presence or absence of the midline diastema by

clinical examination through direct inspection of the oral cavity.

**Statistical Analysis**

Computer program used was Statistical Package for Social Sciences (SPSS) for Windows, version 20 and Microsoft Excel for cross tabulation. Chi square test was used to study the prevalence with gender.

For all statistical tests, a P- value of less than 0.05 was considered to be significant.

Data was grouped and analyzed using frequencies and percentages thus the results were grouped in form of tables.

**Strengths and Limitations**

The study was simple to carry out, short quick clinical examination. It is doable, time efficient and economical. It did not represent the Indian population as a whole. It only considered University students and no other category. The etiological factors were not considered in the study.

**Results**

A total of 2200 students (1700 females and 500males) 18 to 25 years old were included in this study. Midline diastemas were reported in 161 (7.5%) students with more prevalence in females (8.2%) than males (4.9%). It was more frequent in the maxilla (7.1%) than in the mandible (0.3%) (Table1).

**Table 1: Prevalence of midline diastema (%)**

Jaw	Male	Female	Total	p-value
Maxilla	24 (4.8%)	132 (7.8%)	156 (7.1%)	0.004
Mandible	2 (0.1%)	4 (0.2%)	6s (0.3%)	
Maxilla and mandible	1 (0.1%)	2 (0.2%)	3 (0.3%)	
Total	28 (4.9%)	138 (8.2%)	164 (7.5%)	

**Discussion**

This is a cross sectional study conducted to investigate the prevalence of midline diastema among Rama University students. The results revealed a prevalence of 7.5% (7.1% in maxilla and 0.3% in the mandible) of midline diastema. In the present study, the prevalence of midline diastema was 7.5% which was slightly more than the result reported in US population (6%) [15], whereas very small prevalence 1.9% were observed among South Indian population [3]. In contrast most of the previous

studies showed high prevalence of midline diastema; 9% in Sinhalese population, 12.59% in Pakistani patients, 26% in Tanzanian patients and 28% in Iraqi population[12,16,17,18].

This variation in midline diastema prevalence could be attributed to the differences in genetic and environmental factors, age group, gender and sample size for study population. Concerning genders, female had approximately twice percentage of the male midline diastema, which in agreement with previous studies by Oji, Obi china and Hameed Allah Jan [12,19], in contrast, Master Luqman et al found it more in male[9]. Maxillary midline diastema was recorded more frequently than mandible one in most of the previous studies [3,6,12,14,17,18,19] which inconstant with the present result, this may have explained by the fact that a greater incidence of spacing exists in the anterior region of maxilla compared to other areas in the oral cavity [3]. In the present study, the prevalence of mandibular midline diastema was found to be 0.3% which was more than the number in both arches (0.2%), which inconsistency with results obtained by Antihuman and Mugonzibwa in Tanzanian population [17], however it is inconsistent with studies among Baghdadis and South West Nigerian population where diastema in both arches was more frequent than in mandibula rone [6,18]. In some previous studies, maxillary midlinediastema occurred more in females than males, and vice versa the mandible one [6,18]. Whereas, in the present result female had more prevalence of midline diastema of both jaws.

Vivek Govila and Smita Govila, suggested that midline diastema may lead to phonetic problem particularly with S sound [21]. Furthermore, Koora stated that diastema can affect the speech in “S” sound [22]. It well documented that the etiological factor of midline diastema is multi factorial phenomenon [3, 8]. Numerous studies by Hashim Nainar [3], G.Oliaiya [6], Nikolaos et al [1], Gass et al [9], Mehdi Abdul Hadi [18], Hadeel AlH ashimi [14] and Master Luqman et al [20] revealed a significant hereditary cause of midline diastema in families. Several Factors have been also implicated as the possible etiology of diastema among which are the presence of a superior labial frenum, a mismatch between teeth and jaws (spacing), supernumerary teeth, missing teeth and peg shape lateral incisors [22]. Hashim Nainar [3] described that generalize spacing was a significant etiological factor for midline diastema, this mainly due to teeth jaw size discrepancy. On the other hand, Oesterle [18] suggested that distal inclination of maxillary central incisors is an etiological factor of midline diastema. Treatment of midline diastema is mainly attributed to esthetic and psychological reasons, rather than

functional one [1]. Treatment should not initiate if the diastema is physiological and usually if the canines have not erupted [21].

## Conclusion

Variation abounds in the occurrence of midline diastema from one population to the other. Mid line diastema is a common problem with prevalence of 7.3% in our sample. This study shows that maxillary midline diastema occurs more than mandibular one, and it occur in female more than male.

Midline diastema runs in families. Midline diastema is commonly associated with multi factorial etiology. Among the observed etiological factors, the high attach labial frenum was the most common etiological factor..

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