

The Prevalence and Gender Distribution of Midline Diastema among Patients Attending A Private Dental College - An Original Study

Research Article

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Abstract

Diastema is the space between adjacent teeth. Midline diastema of midline diastema have been documented which includes transient malocclusion, abnormal frenal attachment, proclination, midline pathology, iatrogenic cause and racial predisposition. Midline diastema can be managed by means of removal of cause, active treatment and retention. The aim of this study was to evaluate the prevalence of midline diastema among the Chennai population visiting a private dental institute. Data collection was done in a university setting. A total of 41190 patients were reviewed from the time period of June 2019 to March 2020. Patient records were examined, and the study parameters were listed. The total number of patients with midline diastema, along with their ages and genders were collected. Excel tabulation and SPSS Version 22 was used for data analysis. Chi square test was done to analyse the data. There was statistical significance between the variables that included age, gender and individual orthodontic variation. Midline diastema is more prevalent among the male population, specifically among 24-26 years of age.

Keywords: Anterior Spacing; Midline Diastema; Prevalence.

Introduction

Midline diastema refers to anterior midline spacing which is greater than 0.5mm, between both the central incisors be it maxillary or mandibular teeth [1]. It is usually part of the dental development during the mixed dentition period, known as the ugly duckling stage [2]. However, there are several reasons for the occurrence of midline diastema in the post development stages [3]. They include arch length discrepancy where conditions such as missing teeth, peg-laterals and microdontia affect the midline spacing [3, 4].

Another reason includes abnormal frenal attachment [3, 5]. A thick labial frenal attached at the extent of the papilla, exceeding the papillary and the papilla penetrating will lead to midline space discrepancy. Proclination due to oral habits like thumb sucking can cause midline diastema along with generalised spacing [3, 6].

Midline diastema can be diagnosed by a few characteristic traits. The first is a direct visualisation of the space seen in the anterior region [7]. Secondly, blanching of the tissue in the incisive papilla region palatal central incisor when the labial soft tissue stretched [8]. Subsequently, the discrepancy by measuring the mesiodistal width of the teeth [9]. The more subtle way of diagnosing includes observation of spacing in the interdental alveolar bone seen via a periapical radiograph and revealing the presence of any existing pernicious oral habits [4, 10].

Midline diastema can be managed by various methods. The first line of treatment would be the removal of cause [11]. Based on the patient's clinical history, the etiological factor should be eliminated [12]. For instance, if oral habits were identified, habit breaking appliances can be suggested [12, 13]. However, in case of a mixed dentition phase, no specific treatment is required as it is self-correcting with the eruption of permanent canines [14].

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The same line of treatment doesn't apply for high frenal attachment; it is advised that the midline diastema should be corrected as much as possible before frenectomy can be done [15]. This reduces the formation of scar tissue, which otherwise can result in impeding the progress of space closure [15, 16]. Peg laterals if present can be treated by means of prosthetic or orthodontic orthodontic correction [17].

Another method of correction includes the application of reciprocal anchorage by providing a removable or fixed appliance, depending on the severity of midline diastema [6]. Cosmetic restoration using aesthetic composite resin can also aid in correcting mild diastema in adults. Prosthetic restoration can also be advised. This study provides a different epidemiological approach among our population. Previously our team has a rich experience in working on various research projects across multiple disciplines. [18, 32]. Now the growing trend in this area motivated us to pursue this project. This study was done to evaluate the incidence of midline diastema among the South Indian Population.

Materials and Methods

This study was based on a university setting where case records of patients who visited the institution from June 2019 to March 2020 were analysed. Case sheets of the patients were reviewed individually, and the data was cross-verified by another examiner to bias. Overall case records of 41190 patients were evaluated. Following age sorting of patient details within the range of 18-35 years, the final sample was obtained which included records of 17153 patients. The data was further analysed to obtain the total number of patients with midline diastema. Incomplete or missing data has been eliminated.

Parameters considered in the tabulation were age, gender and presence of midline diastema. SPSS Version 22 was used to im-

port and analyse the data. Chi-square test was done to evaluate the statistical significance of the values obtained. The dependent variables included midline diastema.

Results & Discussion

The following were the results obtained from the analysis: Table 1, Figure 1 shows the cross-tabulation between age and midline diastema. Patients were segregated between the ages 18-35. 24-26 had the highest number of prevalence in terms of midline diastema - 20 patients. The least number of patients between the ages of 33-35 showed the least prevalence - 7. The results were statistically significant between age and individual orthodontic variation based on the Chi-square test. (p-Value < 0.05).

Table 2, Figure 2 shows the cross-tabulation between gender and midline diastema. Out of 17153 patients, 8352 were male patients while 8801 were female patients. 908 male patients had individual orthodontic variation. Out of which 53 patients had midline diastema. 602 female patients had individual orthodontic variation. Out of which 32 of them had midline diastema. Based on the statistics obtained, the male population was proven to be more prevalent than the female population. The results were statistically significant between gender and individual orthodontic variation based on the chi-square test. (p-value <0.05).

This study showed the association between age, gender and presence of midline diastema. The above results showed association with all the parameters, it's significant value and corresponding statistics in the form of bar charts.

The overall prevalence of midline diastema among the population visiting Saveetha Dental College was noted to be 0.49%. The frequency of occurrence was higher among males(53) than females (32). In this study, we have observed that there was significant association between age, gender and presence of midline diastema.

Figure 1. Bar graph represents the age distribution in the presence of midline diastema where pink represents 18-20 years old, yellow represents 21-23 years old, green represents 24-26 years old, red represents 27-29 years old, brown represents 30-32 years old and blue represents 33-35 years old. X-axis represents age distribution and Y-axis represents the number of patients with midline diastema. Almost in all age groups, the presence of midline diastema has been detected. It is highest among 21-23 years of age and lowest among 18-20 years of age.

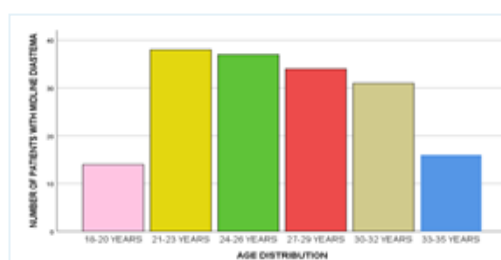


Figure 2. Bar graph represents the gender distribution in the presence of midline diastema where black represents male and purple represents female. X-axis represents gender distribution and Y-axis represents the number of patients with midline diastema. The occurrence of midline diastema among male patients is higher compared to female patients with midline diastema.

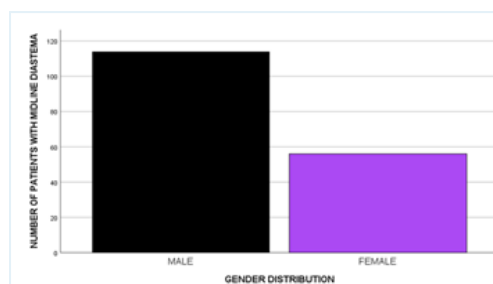
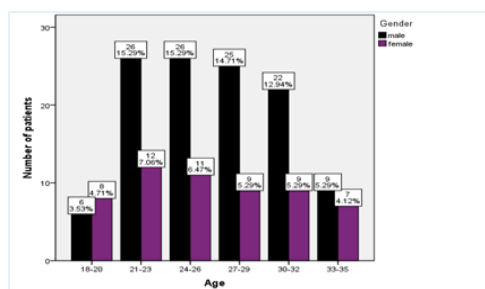


Figure 3. Bar graph represents the gender distribution between different age groups where black represents male and purple represents female. X-axis represents age groups and Y-axis represents the number of patients. The occurrence of midline diastema among male patients is higher (15.29%) specifically between ages 21-26, and lower among female patients with midline diastema (4.12%) specifically between ages 33-35. (Chi square value 14.967, p value= 0.0015-statistically significant).



Patients were segregated based on age ranging from 18-35 years. Figure 1 shows age versus midline diastema. Midline diastema was highly prevalent among patients between the ages 24-26 years of age. This can be attributed to the fact that in most of the cases, midline diastema even if it is un-esthetic, is left unnoticed and diagnosis is done when the patient reports later in adult age when other dental problems coexist [33]. It may be also due the etiological factors and hereditary reasons [34]. Most young adults have retained midline diastema due to pre-existing factors that developed during the mixed dentition period [35].

We also observed that there was a significant association between gender distribution in the presence of midline diastema. Figure 2 shows gender distribution in the presence of midline diastema where it was proven to be specifically significant in male population compared to females. The initial male to female ratio was not standardized therefore a general conclusion cannot be drawn. This also can be attributed to the genetic predisposition and ethnicity [4].

In another study conducted by Umanah A et al, a contradictory result was obtained where the female population had higher prevalence than the male population in the occurrence of midline diastema [36]. Zahrani et al, detected that it was a common occurrence that female patients seek treatment of the midline diastema due to aesthetic concern than the male patients [37]. Our institution is passionate about high quality evidence based research and has excelled in various fields [38-48]. We hope this study adds to this rich legacy.

The limitation of this study is the specific data that needed to be collected in a restricted sample size. Therefore it cannot be generalised to a larger population. Futuristically, the study population should be made larger. A prospective study on midline diastema with emphasis on etiology should be conducted to better conclude this study.

Conclusion

Within the limits of this study, midline diastema was found to be more prevalent among the male population; however the results of the study cannot be applied for the entire population due to the lesser sample size within the given geographical location. Extensive research including more diverse populations can give conclusive evidence regarding the presence of midline diastema in various populations.

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