

ORIGINAL RESEARCH

Assess midline diastema in school going children- A clinical study

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ABSTRACT:

Background: The present study was conducted to assess midline diastema in school going children. **Materials & Methods:** 86 children age ranged 4- 12 years of both genders were recruited. Classification of the labial frenum as proposed by Sewerin's typology was done. **Results:** Age group 4-6 years had 18, 7-9 years had 28 and 10-12 years had 40 children. Maximum cases showed simple type seen in 10 in 4-6 years, 16 in 7-9 years and 24 in 10-12 years. Minimum number was of two or more variation type seen 1 in 4-6 years and 1 in 10-12 years. Midline diastema in age group 4-6 years had 4 (22.2%), 7-9 years had 7 (25%) and 10-12 years had 12 (30%). **Conclusion:** Authors found high prevalence of midline diastema in 1-12 years age group.

Key words: Children, frenum, Midline diastema

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INTRODUCTION

A midline diastema is typically part of normal dental development during the period of mixed dentition. However, several factors can cause a diastema that may require an intervention.¹ Enlarged labial frena have been blamed for the majority of persistent diastemas, but the etiologic role of this structure is now understood to influence only a small proportion of cases. Other etiologies associated with diastema include oral habits, muscular imbalances, physical impediments, abnormal maxillary arch structure, and various dental anomalies.² There are no studies that establish a relationship between the different types of freni and the presence of the midline diastema in children in primary dentition.³ The most frequent frenum typology used is the one established by Sewerin. According to Miller, the frenum should be characterized as pathogenic when it is unusually wide or there is no apparent zone of attached gingiva along the midline, or the interdental papilla shifts when the frenum is extended. Over the years, the relationship between the maxillary midline diastema and the labial frenum has been the subject of much controversy and confusion.⁴ In 1939, Hirschfield advocated frenectomy as a mucogingival procedure to eliminate the aforementioned pathologic situations caused by an abnormal frenum attachment. There is still a controversy among researchers concerning the need for it at all, as well as the right time

for frenectomy.⁵ The present study was conducted to assess midline diastema in school going children.

MATERIALS & METHODS

This study was conducted in the department of Pedodontics on 86 children age ranged 4- 12 years of both genders. Approval for the study was taken from ethical approval committee. Written consent was obtained from parents.

Data such as name, age, gender etc. was recorded. Intraoral examination was done with mouth mirror and explorer. Classification of the labial frenum as proposed by Sewerin's typology was done. The level of insertion of the maxillary labial frenum was also evaluated according to the classification proposed by Mirko et al. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I: Distribution of children

Age group (Years)	Number	P value
4-6	18	0.02
7-9	28	
10-12	40	

Table I shows that age group 4-6 years had 18, 7-9 years had 28 and 10-12 years had 40 children. Table II, graph II

maximum cases showed simple type seen in 10 in 4-6 years, 16 in 7-9 years and 24 in 10-12 years. The difference was significant (P< 0.05). Minimum number was of two or more variation type seen 1 in 4-6

Graph I: Distribution of children

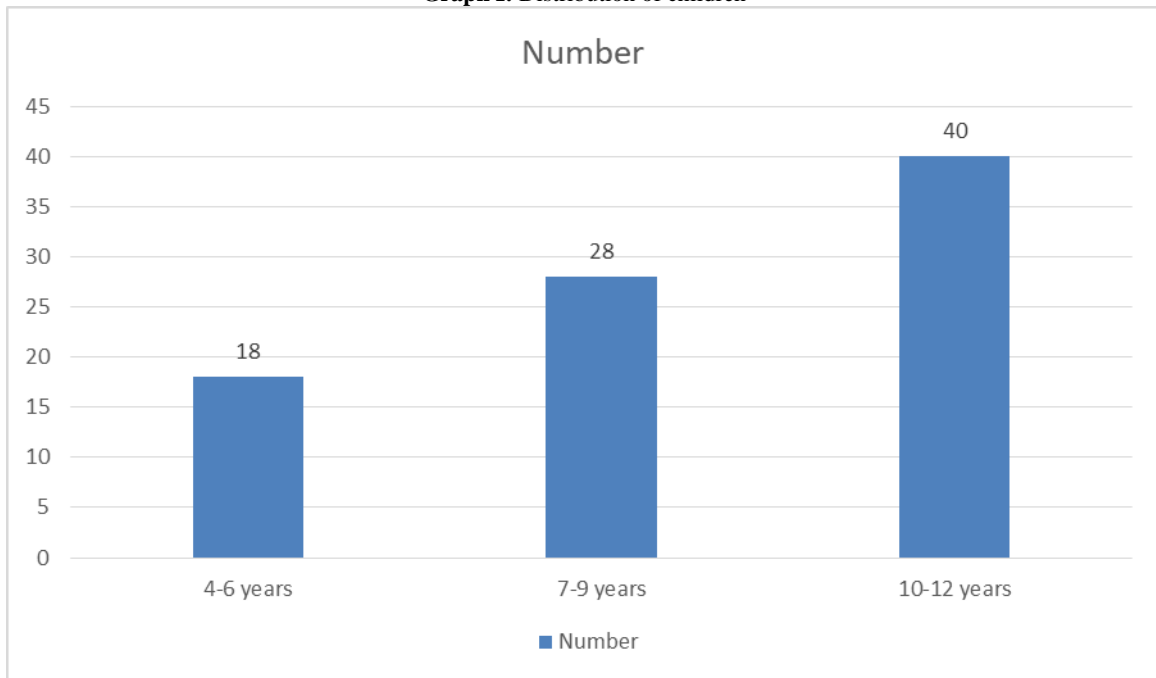


Table II: Types of maxillary labial frenum

Type	4-6	7-9	10-12	P value
Simple	10	16	24	0.05
Persistent tectolabial	2	4	6	0.02
Simple with appendix	2	3	4	0.09
Simple with nodule	1	2	3	0.70
Double	2	3	2	0.82
Two or more variation	1	0	1	0.91

Graph II: Types of maxillary labial frenum



Table III: Prevalence of midline diastema

Age group (Years)	Midline diastema	Percentage
4-6 years	4	22.2%
7-9 years	7	25%
10-12 years	12	30%

Graph III: Prevalence of midline diastema

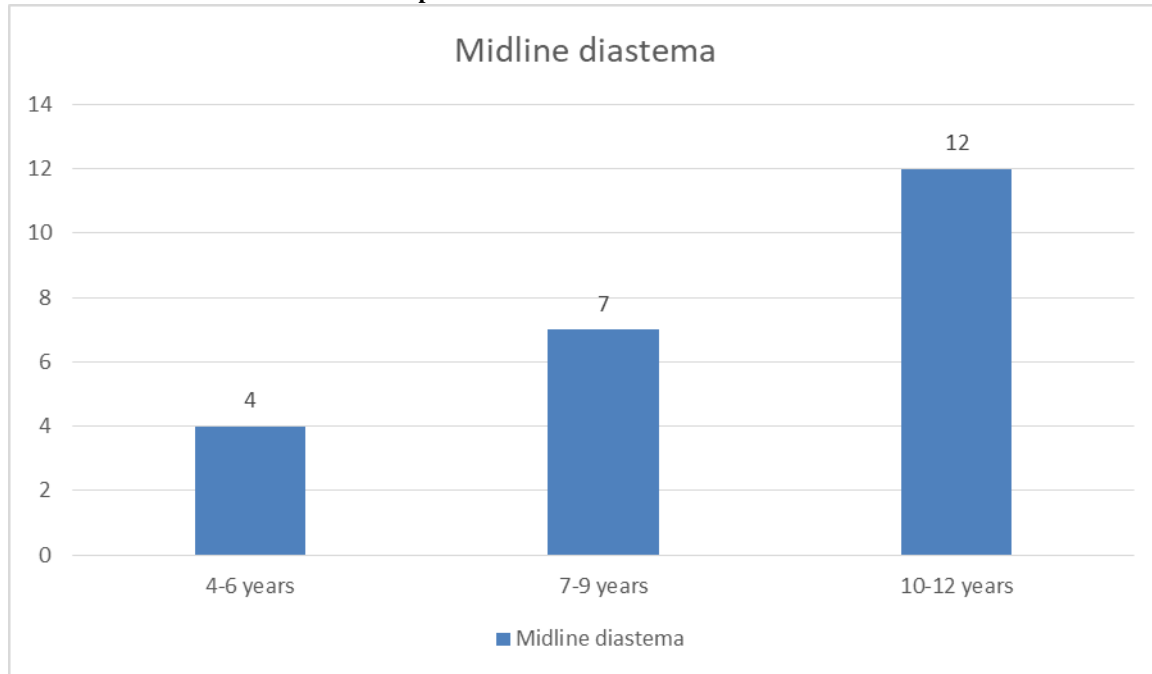


Table III, graph III shows that midline diastema in age group 4-6 years had 4 (22.2%), 7-9 years had 7 (25%) and 10-12 years had 12 (30%).

DISCUSSION

The presence of a diastema between the teeth is a common feature of the anterior dentition that remains until the completion of the permanent dentition. Carefully developed diagnoses and advanced planning enable the identification of the most appropriate treatment to address the needs of each individual patient.⁶ There has been much debate regarding the ideal time to initiate orthodontic treatment, and from the orthodontist’s perspective, only maxillary midline diastemas and congenitally missing teeth should be treated in later stages. An effective diastema treatment requires the correct diagnosis of its etiology and an intervention that is relevant to that specific etiology, including medical and dental histories, radiographic and clinical examinations, and possibly toothsize evaluations.⁷The present study was conducted to assess midline diastema in school going children.

In present study, age group 4-6 years had 18, 7-9 years had 28 and 10-12 years had 40 children. Jonathan et al⁸estimated the prevalence of different morphologic types of maxillary labial frenum among children of age 3 – 12 years, to find out the relationship between the level of insertion of the frenum and age of the child and to evaluate the correlation between frenum morphology,

insertion and midline diastema in children. The midline diastema was determined by measuring the distance between the midpoints of the mesial surfaces of both central incisors with the help of divider and ruler. The values were recorded in the prepared schedule. The most prevalent morphologic type of maxillary labial frenum was the simple type. The number of simple, persistent tectolabial, simple with nodule, and simple with appendix frenum was 825 (68.7%), 184 (15.3%), 124 (10.3%), and 61 (5%) respectively. Double frenum and two or more variations at the same time were seen in 4 (0.3%) and 2 (0.16%) children, respectively.it was found that the frenum was inserted into the alveolar mucosa in 571 (47.5%), in the gingiva in 458 (38.1%), and penetrating the incisive papilla in 171 children (14.2%). Maxillary labial frenum was seen inserted more frequently in the alveolar mucosa in children of 10–12 years' age group (58.3%). The gingival and incisive papillary insertion was more common in children of 6–9 years' and 3–5 years' age groups.The presence of an abnormal frenum can be a cause in persistent midline diastemas. Tooth movement usually is deferred until eruption of the permanent canines but can begin early in certain cases with very large diastemas.

We found that maximum cases showed simple type seen in 10 in 4-6 years, 16 in 7-9 years and 24 in 10-12 years. Minimum number was of two or more variation type seen 1 in 4-6 years and 1 in 10-12 years. The midline diastema has a multifactorial etiology. In addition to the labial frenulum, microdontia, mesiodens, peg-shaped lateral

incisors, lateral incisor agenesis, cysts in the midline region, habits such as finger sucking, tongue thrusting and/or lip sucking, dental malformations, genetics, maxillary incisor proclination, dental-skeletal discrepancies, and imperfect coalescence of the interdental septum should be considered as factors that can cause diastema.⁹

We observed that midline diastema in age group 4-6 years had 4 (22.2%), 7-9 years had 7 (25%) and 10-12 years had 12 (30%). The clinical diagnosis is important and should necessarily include radiographic examinations. During the “ugly duckling” stage, the long axes of the roots of the maxillary central and lateral incisors diverge from each other which often misleads practitioners to a diagnosis of a diastema caused by a hypertrophic labial frenulum.¹⁰

CONCLUSION

Authors found high prevalence of midline diastema in 1-12 years age group.

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