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Original Research

Prevalence of midline diastema observed in school going children: An observational study

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ABSTRACT

Background: Midline diastema is a space observed between maxillary central incisors. Midline diastema is a major concern for both parents and children. The determination of the timely closure of developmental diastema is essential for clinical practice because of growing concern of people. **Aim:** To study the Prevalence of midline diastema observed in school going children. **Material and method:** A total of 400 samples will be selected for the study and will be studied for a period of 2 years. Children selected for the study were aged between 6 to 14 years. Patients were checked for maxillary and Mandibular diastema. **Result:** An overall 31.5% case of diastema was observed. Maxillary diastema was more common as compared to Mandibular. Diastema was more commonly seen in males rather than females. **Conclusion:** malocclusion is a growing concern among parents and guardians. Midline diastema is more common among children aged 12 to 14 years. Males are more prone than females.

Key words: midline diastema, mixed dentition, prevalence.

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INTRODUCTION

Malocclusions and its increasing are one of the oral health problems which are a matter of major concern in Public Health, defined as health problems by the World Health Organization. Malocclusion represents significant variations in growth and morphology of dental arches and results in aesthetic dissatisfaction of the individual as well as changes in speech, breathing, posture, chewing, swallowing, temporomandibular joint disorders and pain bucofaciais.¹ According to the literature the prevalence of malocclusion in India varies between 19.6% to 55.3%.² Midline diastema is a common esthetic problem of patient during dental consultation. It can be either transient owing to the developing dentition or created due to various etiologies. Diastema is a presence of space between proximal surfaces of anterior teeth. It occurs more frequently in maxillary arch between two central incisors.^{3,4} Authors have stated that an abnormal frenum is a cause of midline diastema, while Tait in their study reported that frenum is an effect and not a cause for the incidence of diastema.^{5,6} The incidence of midline diastema varies greatly with the age-group, gender, population and race. This condition is very common

in the paediatric age-group at the early stages of dental development.⁷ So in present study we aimed to study the prevalence of midline diastema in different age groups of children.

MATERIAL AND METHOD

The study was carried out in school going children aged between 6 to 14 years came for regular dental check up in the Department of Dentistry, UPUMS, SAIFAI. Total of 400 samples was selected for the study and was studied for a period of 2 years.. 400 patients were divided in different groups based on age. Measurement of both maxillary and Mandibular midline diastema was done between the midpoints of the mesial surfaces of both central incisors using vernier calliper. Only the diastema greater than 0.5mm was determined and recorded according to age and sex.

Inclusion criteria:

1. Patient with no history of previous or present orthodontic treatment,
2. No obvious dental or dento facial abnormalities
3. The inmates who were willing to participate in the study.

Exclusion criteria:

1. Physically disabled Patients,
2. Patients with systemic disease or conditions.
3. Patients not willing to participate.

Clinical examinations were carried out at classroom or outside in the corridor with the help of a mouth mirror and CPI probe under natural day light. Overall oral condition was examined with the help of mouth mirror. The examination for malocclusion was made according to the Dental Aesthetic Index (DAI).⁸ Children were divided into three groups based on age.

Group 1- 6 to 8 years

Group 2- 9-11 years

Group 3- 12-14 years

Data analysis:

All the data was correlated, calculated, compared and evaluated under guidance. All the clinical findings was analysed.

Statistical procedures was carried out in following steps:

1. Data compilation and presentation
2. Statistical analysis

The data collected was compiled, tabulated, analyzed and subjected to statistical tests. Analysis was done using SPSS.

RESULT

In present study a total of 400 schools going children were included. All the samples were divided into three groups based on age. Group 1 consisted of 100 patients (25%) aged between 6 to 8 years, group 2 consisted of 130 (32.5%) patients aged between 9 to 11 years and group 3 consisted of 170 patients (42.5%) aged between 12 to 14 years. Overall result showed that in present study maximum patients were aged between 12 to 14 years i.e. 42.5% (Graph 1). Of the 400 samples included in the present study 135 were males 33.75% and 265 were females i.e. 66.25%. In present study majority of the patients were females (Table 1). Of the 400 cases maxillary midline diastema was seen in 113 patients i.e. 28.25% and 4 cases of Mandibular midline diastema i.e. 1%. Both Mandibular and maxillary diastema was seen in 9 cases i.e. 2.25%. An overall 31.5% case of diastema was observed. Overall result showed that maxillary diastema was more commonly seen as compared to mandible (Table 2). Prevalence of malocclusion was observed based on gender. Result showed that maxillary diastema was seen in 62 males i.e. 15.5% and 51 females 12.75%. Mandibular diastema was observed in 3 males i.e. 0.75% and 1 female i.e. 0.25%. Both maxillary and Mandibular diastema was seen in 6 males i.e. 1.5% and 3 females i.e. 0.75% (Graph 2). In current study it was found that maxillary diastema was more common in males as compared to females. Both Mandibular and maxillary diastema was found to be significant as compared to Mandibular diastema in males. A significant gender based difference in occurrence of malocclusion was seen in our study (p<0.001).

GRAPH 1: DISTRIBUTION OF GROUP

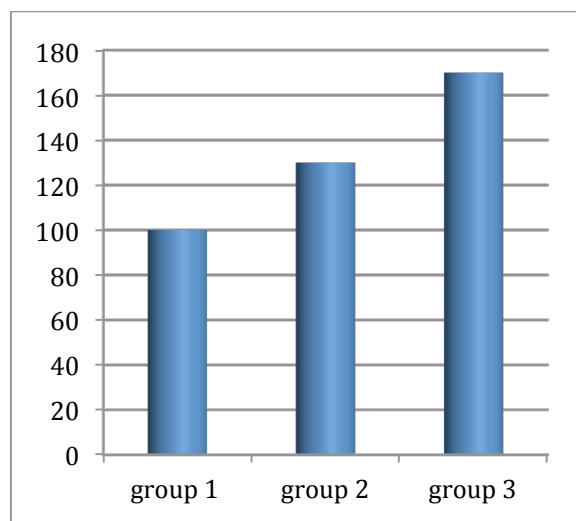


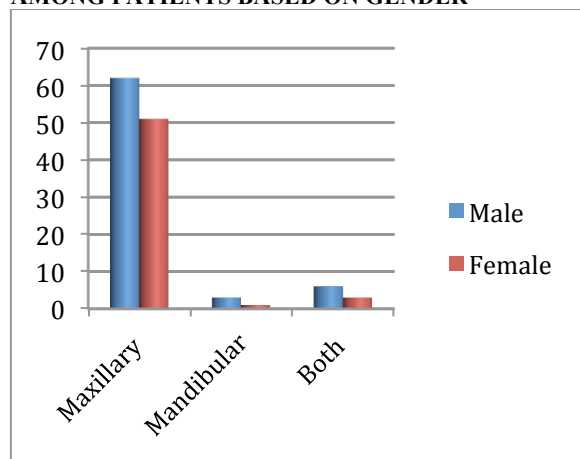
TABLE 1: DISTRIBUTION OF SAMPLE BASED ON GENDER

Gender	Sample	Percent
Male	135	33.75%
Female	265	66.25%

Table 2: MIDLINE DIASETEMA OBSERVED

Diastema observed	Sample	Percent
Maxillary	113	28.25%
Mandibular	4	1%
Both	9	2.25%
Total	126	31.5%

GRAPH 2: PREVALENCE OF DIASTEMA AMONG PATIENTS BASED ON GENDER



DISCUSSION

Bishara defined midline diastema as a space of varying magnitude between the crowns of fully erupted maxillary or mandibular central incisors.⁹ According to the data available its been found that the majority of diastema closes spontaneously by the time maxillary canine appear, however a few persist into mature permanent dentition.¹⁰ Diastema is one of the major problem

frequently encountered in dental clinics. Parents are very much concerned due to its effect on esthetics. Various reasons can cause a diastema. One of the reasons can be an enlarged labial frenum, however it is understood by now that it only represents a small proportion of cases. Oral habits, muscular imbalances, physical impediments, abnormal maxillary arch structure and various dental anomalies are also responsible for causing diastema.¹¹In current study we found that of the 400 patients examined 25% were aged between 6 to 8 years, 32.5% patients were aged between 9 to 11 years and 42.5% were aged between 12 to 14 years. Overall result showed that in present study maximum patients were aged between 12 to 14 years i.e. 42.5%. Chahal N et al et al in their study found that Majority of children with malocclusion were aged between 10 to 12 years 37.5%.¹² Of the 400 samples included in the present study 135 were males 33.75% and 265 were females i.e. 66.25%. Of the 400 cases maxillary midline diastema was seen in 113 patients i.e. 28.25% and 4 cases of Mandibular midline diastema i.e. 1%. Both Mandibular and maxillary diastema was seen in 9 cases i.e. 2.25%. An overall 31.5% case of diastema was observed. Overall result showed that maxillary diastema was more commonly seen as compared to mandible. Neeta Ghimire et al in their study found that maxillary midline diastema was seen among 26.6% of children, mandibular diastema among 1% of children, and 1.6% have midline diastema present together both in maxilla and mandible.¹³ This was similar to those reported in our study. Result showed that maxillary diastema was seen in 62 males i.e. 15.5% and 51 females 12.75%. Mandibular diastema was observed in 3 males i.e. 0.75% and 1 female i.e. 0.25%. Both maxillary and Mandibular diastema was seen in 6 males i.e. 1.5% and 3 females i.e. 0.75%. In current study it was found that maxillary diastema was more common in males as compared to females. Both Mandibular and maxillary diastema was found to be significant as compared to Mandibular diastema in males. A significant gender based difference in occurrence of malocclusion was seen in our study ($p < 0.001$). our results are in accordance with Neeta Ghimire et al.¹³ similar results was reported by Dhanyasi Ashok Kumar et al in their study reported those 67.7% males and 32.3% females.¹⁴ However Gabriel et al in their study on midline diastema amongst south western Nigerians found the incidence of midline diastema to be 26.1% and also better appreciated among females (50.6%) than in males (4.1%).¹⁵ **Dhanyasi Ashok Kumar et al (2012)**¹⁰ assessed the prevalence of malocclusion among children and adolescents in orphanages of Udaipur district, Rajasthan, India Material and methods: The total sample comprised of 883 subjects (67.7% males and 32.3% females), aged from 7-18 years. Clinical examination was made according to the Dental Aesthetic Index (DAI). Chi-square test was carried out to find the relationship between malocclusion with different independent variables. Results showed that 33.2% of participants had no abnormality or minor malocclusion, who need no or slight treatment whereas, only 2.9%, 2.5% and 1.4% of subjects had definite, severe and very severe or handicapping malocclusion respectively to whom treatment desirable was elective, highly desirable and mandatory respectively. Percentage of orphanages inmates with missing incisors, canine, and premolar teeth

was found to be 1.1%. The authors concluded that the findings confirmed that orphans had increased prevalence of malocclusion.

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