

PREVALENCE OF CROSSBITE MALOCCLUSION AMONG PATIENTS VISITING A DENTAL HOSPITAL

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Abstract

Introduction: When the upper teeth lingually contact the lower teeth, this is known as a crossbite. Both unilateral and bilateral crossbites are possible. An entire arch of teeth or a single tooth may be misaligned. Numerous solutions have been put forth to address this issue. The upper arch will be expanded during treatment, and the lower arch will also be corrected. It is imperative to address the underlying cause of the crossbite, such as respiratory issues or a habit of sucking.

Aim: This study's objective was to determine the number of patients at a dental hospital with crossbites.

Materials and methods: The Saveetha Dental College's Digital Information Archiving Software (DIAS) was used to gather the data. The information was gathered between January 2020 and December 2020. Patients who had undergone a clinical evaluation were included in the data. Excel was used to tabulate and enter the data, and the SPSS package software was used to analyse it.

Results: 1030 patients out of 10048 had crossbites. 5.6% of cases of posterior crossbite and 4.5% of cases of anterior crossbite were reported. Angles class 1 malocclusion was present in a sizable percentage of crossbite patients (83.01%). It was discovered that 89.4% of patients with single tooth crossbite and 79.5% of those had unilateral crossbite.

Conclusion: Within the constraints of the study, we discovered that 10.2% of cases of crossbite were widespread, with posterior crossbite being more common than anterior. In order to ascertain the prevalence of crossbite, study is required because epidemiological data varied according to location.

Keywords: Anterior crossbite, Crossbite, Dental Malocclusion, Innovative Technology, Prevalence, Posterior crossbite

INTRODUCTION:

A crossbite is a malocclusion which is a common problem in orthodontics (1–4). It is abnormal buccal, labial or lingual relationship between the two arches when the teeth of both maxilla and mandible are in occlusion. The crossbite malocclusion can either have a dental component or skeletal or sometimes it can be both (5). One or more teeth may be involved in a crossbite, and it may also be unilateral or bilateral—that is, affect only one side or both sides.

Among malocclusions, the crossbite is one of the most common. It's not always evident what causes a crossbite. It might develop as a result of habits or any pathology, as well as dental, bone, soft tissue, or respiratory causes (6–10). It is agreed that a narrow maxilla is due to an abnormal function. Prolonged or frequent finger sucking can be associated with perioral muscle malfunction which leads to crossbite (11). It can be due to heredity or due to some deleterious oral habits like thumb sucking or due to early loss of deciduous teeth (12–14). Impaired nasal breathing

which is caused by enlarged adenoids and tonsils can also cause crossbite sometimes (13,15,16). In several cases, the crossbite occurs along with a mandibular deviation which is called a forced crossbite, this causes midline shift (3,17).

The crossbite in a permanent dentition is said to occur from primary dentition. The primary teeth occlusion is said to have a huge role in determining the permanent teeth occlusion (18). Hence if the crossbite is not resolved then it will transfer from childhood to adulthood. Many untreated crossbites can cause growth changes which not only results in asymmetry of the dentition but also of the skeletal base too (19–21).

According to several studies, crossbite with a displacement on closure is linked to TMJ issues in later life, such as pain or locking of the jaw joints (22,23). Numerous factors can lead to these issues, but several research on adolescents and adults have found that people with crossbites are more likely to experience issues with their jaw joints and are more likely to exhibit their signs and symptoms (24–27). Recent research, however, have been less clear indicating a connection between crossbites and jaw issues. (28–31). Long-term untreated crossbite can aggravate specific teeth malpositions and lead to arch asymmetry. Despite the crossbite, the maxillary arches are frequently relatively symmetrical in the early phases. There is a popular idea that unless these crossbites are corrected, they will really skew the facial symmetry as well as the dental arches. Crossbites should, of course, be avoided wherever feasible. Graber highlighted this to prevent any future skeletal asymmetries. The likelihood of permanent alterations in tooth position, within the bony support, and possibly within the development centre at the mandibular joint increases as the length of untreated posterior crossbite grows (11,32). It has been observed that malocclusions, particularly transverse anomalies, significantly affect the morphology of the condylar process (32).

Crossbites should be diagnosed and treated as soon as possible since, in many instances, these malocclusions are carried over to the permanent teeth. Our staff has a wealth of knowledge and research expertise, which has resulted in publications of the highest caliber (33–52). To ascertain the frequency of crossbite, this investigation is required. The epidemiological research on crossbites varies greatly between nations and between different geographic areas within nations. Planners for oral health could use this information to propose ideas that would aid in the growth of dental health care.

This study's aim is to find the prevalence of crossbite in patients visiting a dental hospital.

MATERIALS AND METHODS:

Study Setting

The patients who visited Saveetha Dental College in Chennai, Tamil Nadu, were the subjects of the current investigation, which was conducted as a retrospective cross-sectional survey. The current study received ethical approval. The study's participants had been to the dental clinic and completed a clinical evaluation. Total of 10048 patients were all examined. Patients' ages were divided into two categories: those under 18 and those beyond 18. The research was conducted from January 2020 through December 2020. The study sample was made up of both male and female participants of a wide variety of ages, however it was predominately South Indian.

Data Collection

Patients' demographic (Age, Sex, Marital Status, Occupation, Address etc.) and clinical information was gathered from both intraoral and extraoral clinical examinations. The occlusion was assessed in the position of highest intercuspation. An irregular labiolingual connection between the anterior teeth is known as an anterior crossbite. The term "posterior crossbite" refers to a transverse discrepancy in the arch relationship where one or more maxillary posterior teeth's palatal cusps do not occlude in the opposite mandibular teeth's central fossae. All of these documents were entered into the Saveetha Dental College's DIAS (Dental Information Archiving Software). Any lacking information was confirmed with the patient or the relevant department. Gross data that might have been biased and had the potential to

influence the studies were excluded. Another examiner double checked and verified all the information that was gathered.

Data Analysis

Excel was used to enter the data, and the Statistical Package for Social sciences (SPSS) was used to analyze it. With the aid of frequencies, percentages, and means, the data was evaluated using descriptive analysis, and it was also examined through the use of descriptive statistics.

RESULTS:

The total number of patients with malocclusion in this study were 10048. Among them 1030 patients had crossbite. Among these crossbite patients 568 patients had posterior crossbite and 449 had anterior crossbite. In this study sample 583 out of 1030 were males and 447 out of 1030 were females. The age distribution among the patients was less than 18 years and 228 patients and above 18 years were 802 patients.

The gender distribution among the crossbite patients was 56.6% male and 43.4% female [Figure 1]. Among all crossbite malocclusion patients ,it was found 83.1% had angles class 1 malocclusion, 6.02% had angles class 2 malocclusion and 10.97% had angles class 3 malocclusion [Figure 2]. Posterior crossbite was found 55.1% among the crossbite patients and anterior crossbite was found to be 44.9% [Figure 3].

Among the posterior crossbite patients , unilateral crossbite was found 79.05% and bilateral crossbite was found 20.95% [Figure 4]. The single tooth crossbite includes the anterior crossbite and single tooth posterior crossbite which was found to be 89.4% and segmental posterior crossbite was 10.56% [Figure 5].

The descriptive and inferential analysis were performed using the statistical programme SPSS.

DISCUSSION:

In this study the prevalence of crossbite was found to be 10.2%. In Western countries it is reported that crossbite occurs in a range of 7% to 22% (21). 13.1% of children in a Brazilian study had posterior crossbite when compared to 6.7% anterior crossbite which was similar to our study where the anterior crossbite prevalence was less when compared to posterior crossbite (53). Ahmed M Alassiry from Saudi Arabia also reported that were more number of posterior crossbite. (54). Correlation of age and crossbite was not considered as there were discrepancies among the distribution of crossbite and the kind of crossbite cannot be associated. The crossbite is also said to occur frequently in females (55). The gender distribution was similar but comparison was not done as this was a prevalence study.

The prevalence of posterior bite being 5.6% was in agreement with the study done in Kerala in India, Tanzania and Finnish (54,56,57). This prevalence was higher than that which was reported in Iran, Italy, Nalgonda in India (58–60). Some of these variances can be attributable to variations in genetic makeup or in communities' preferred methods of sucking. Although some research suggests that association between crossbite and sucking habits are questionable (61).

During the eruption of the primary canines, when a maxillary occlusal relationship develops and the jaw goes through functional adaptation, deviating either to the right or to the left, a crossbite is typically developed (62). Hence early treatment is suggested to prevent the transfer of crossbite from the primary teeth to the permanent teeth.

The study does have some constraints. This cross-sectional, univariate study has a geographic restriction with a higher population of South Indians. For improved outcomes, the study's sample size and duration can be increased.

A greater sample size and the inclusion of diverse ethnicities will produce better results for research that will be conducted in the future. The results of this study can be utilized as a starting point for formulating population-specific preventative and orthodontic treatment methods. Planners for oral health might use the information from this study to suggest solutions that will aid in the growth of dental health care management.

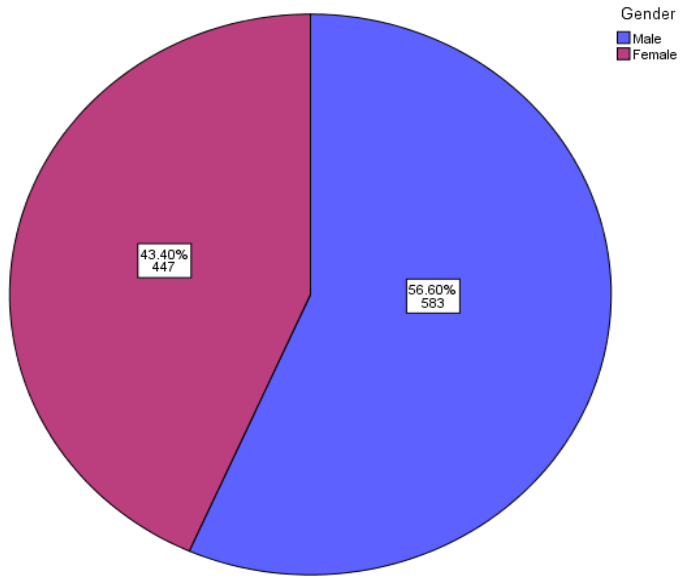


Figure 1: Distribution of gender among the crossbite patients

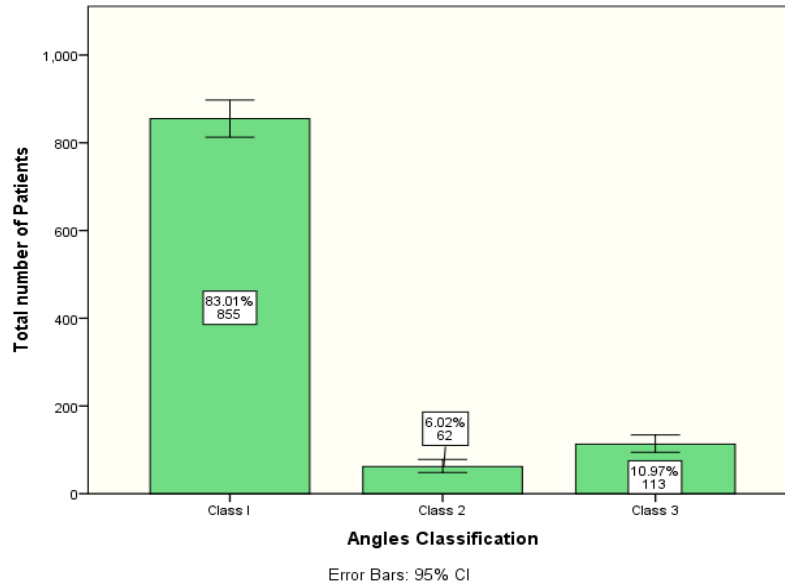


Figure 2: Distribution of Angles classification in crossbite patients

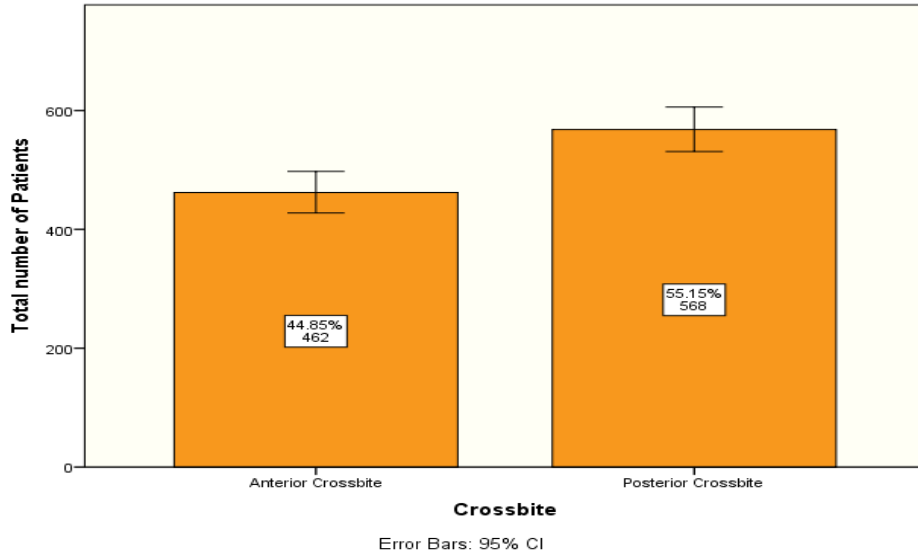


Figure 3: Distribution of anterior or posterior crossbite

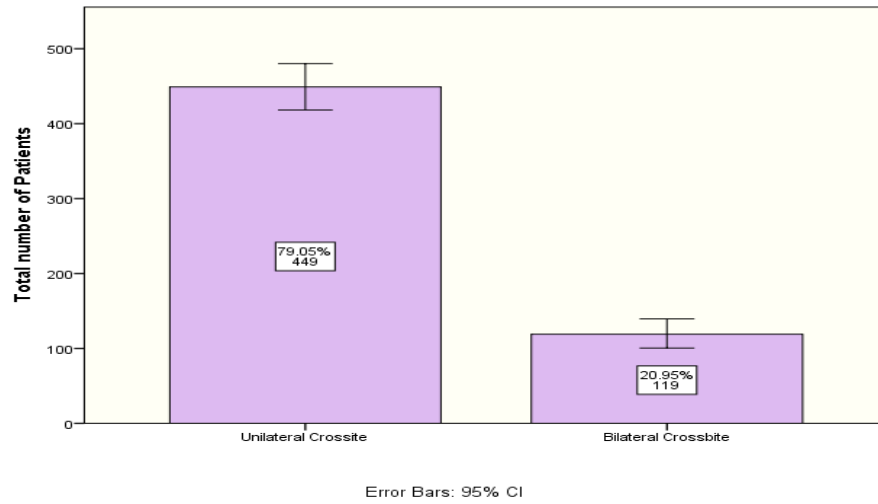


Figure 4: Distribution of unilateral or bilateral crossbite

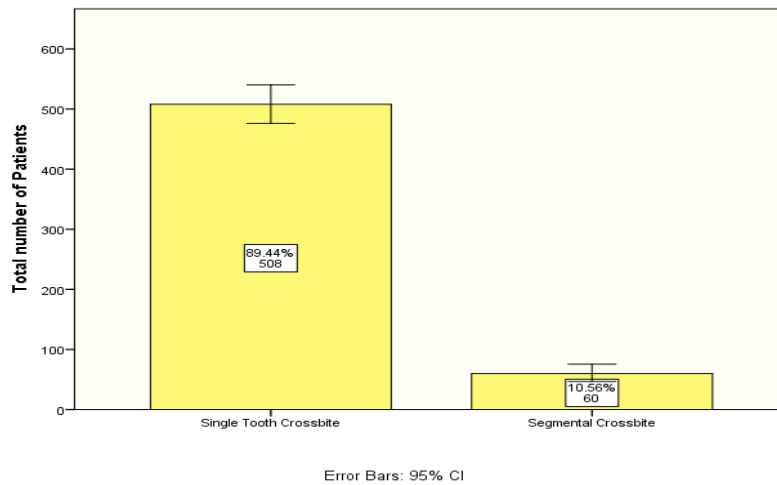


Figure 5: Distribution of single tooth or segmental crossbite

CONCLUSION:

Within the constraints of the study, we discovered that 10.2% of cases of crossbite were widespread, with posterior crossbite being more common than anterior. In order to ascertain the prevalence of crossbite, study is required because epidemiological data varied according to location. This research is needed to determine the occurrence of crossbite as epidemiological studies vary between different geographical regions.

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