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Dr. Aditi Upadhyay
OroGlee Solutions Private
Limited, 2nd Floor, Plot No. 32,
Road No. 2, Sri Shyam Nagar,
Telecom Nagar, Gachibowli,
Hyderabad, Telangana, India

Dr. Kamakshi Kalla
OroGlee Solutions Private
Limited, 2nd Floor, Plot No. 32,
Road, No. 2, Sri Shyam Nagar,
Telecom Nagar, Gachibowli,
Hyderabad, Telangana, India

Corresponding Author:
Dr. Aditi Upadhyay
OroGlee Solutions Private
Limited, 2nd Floor, Plot No. 32,
Road No. 2, Sri Shyam Nagar,
Telecom Nagar, Gachibowli,
Hyderabad, Telangana, India

Prevalence of dental crowding among 13 to 50 year olds in the city of Hyderabad

Dr. Aditi Upadhyay and Dr. Kamakshi Kalla

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Abstract

Background: Dental Crowding is a type of dental anomaly resulting from the disturbance in the proportion between the teeth size and arch length. It is among the commonest conditions for which a person seeks orthodontic treatment. Dental crowding is concerning to the patients because it negatively affects the patient's smile and speech, causing embarrassment and low self-esteem in social settings.

Objective: The purpose of the present study was to determine prevalence of dental crowding among the people in the city of Hyderabad.

Materials and Methods: This study was conducted by OroGlee Solutions Private Limited, Hyderabad. A total of 4552 people of age 13 to 50 years were examined and grouped based on the presence or absence of crowding in their teeth.

Results: Prevalence of dental crowding in people of age group 13 - 50 years was 28.3%.

Conclusion: The prevalence of dental crowding in the population of Hyderabad is significant. These patterns of dental crowding give useful information for planning treatment and attaining optimum dental stability.

Keywords: Dental crowding, prevalence, Hyderabad, intraoral camera

Introduction

Dental Crowding is one of the most frequent oral health concerns. The chief reason a person goes for the orthodontic treatment is for proper alignment of teeth ^[1]. Dental crowding is a result of the discrepancy in the size of a tooth and the dimension of the dental arch ^[2].

Crowding of the anterior teeth is one of the most commonly occurring forms of dental crowding. Despite being such a common occurrence, very less is known about the prevalence of the problem ^[3]. Malocclusion of the teeth can lead to psychological and social issues because they affect dent facial aesthetics, disrupt oral functions like mastication, swallowing, and speech, and make people more vulnerable to trauma and periodontal disease ^[4].

When any of the front tooth in the maxillary or mandibular jaw is a little rotated, there is mild crowding of the teeth. When two to three front teeth in the maxillary or mandibular jaw overlap, there is medium crowding. When the majority of the maxillary or mandibular jaw's front teeth overlap, there is severe tooth crowding ^[5].

Other than the arch-length and tooth size discrepancy, the reasons for crowding to occur can be; the presence of additional or supernumerary teeth, over-retention or early loss of primary teeth, anomalies related to tooth size, delayed mandibular development, and such ^[5].

There is a noticeable increase in the number of people opting for orthodontic treatment in India in the past few years ^[3]. Therefore, it is imperative to have authentic epidemiological data on dental crowding for proper estimation of the overall need for treatment.

The aim of the present study was to determine the prevalence of dental crowding in the population of Hyderabad and to compare the data with other similar studies. This knowledge of presence of dental crowding might help in understanding its occurrence and aid public health policy makers in treatment planning.

Materials and Methods

A cross-sectional survey was conducted by OroGlee Solutions Private Limited, among employees of corporate offices and among school-going children in the city of Hyderabad.

A total of 4552 people were examined using an intraoral camera in the office premises and schools. Dental arches were checked for the crowding of teeth.

A survey questionnaire was prepared to acquire personal details such as age, gender, and relevant dental and medical history. The intraoral camera is very useful to record the minute details of the oral cavity. Informed oral consent of the corporate employees was obtained before the examination. Approval from respective school administration was taken for their students.

Inclusion Criteria

Subjects between the age group of 13 years to 50 years were included in the study.

Exclusion Criteria

Subjects below the age of 13 years and above the age of 50 years were excluded from the study.

Results

A total of 4552 people of age 13 to 50 years were examined to find out prevalence of dental crowding among them. Out of these, a total of 1288 (28.3%) people were found to have crowding in their teeth of varying severity. The remaining population of 3264 (71.7%) people had no crowding in their teeth (Fig 1).

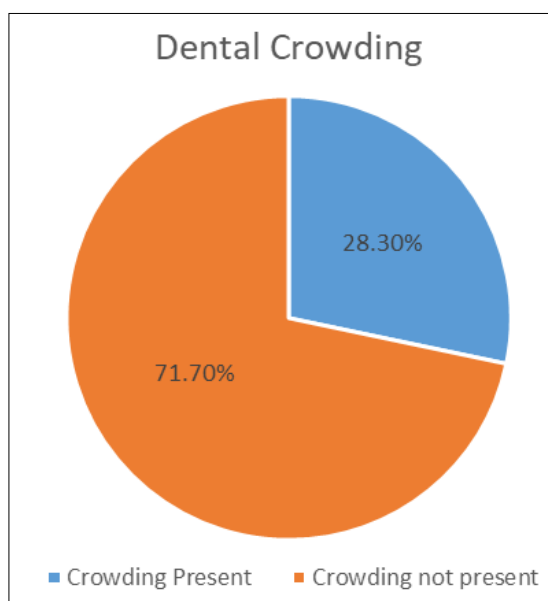


Fig 1: Prevalence of dental crowding in the study population

Discussion

Dental crowding, also referred as teeth crowding, is a condition in which there is scarcity of space in the oral cavity for proper natural alignment of the permanent teeth resulting in overlapping surfaces [5].

There are many reasons that can contribute to crowding, such as:

1. Dental arch length and tooth size are out of proportion (either the dental arch length is shorter or the tooth sizes are larger).
2. Crowding of the teeth can be caused by the presence of additional or supernumerary teeth.
3. Long-term retention of primary teeth can result in the eruption of permanent teeth in an abnormal position, which can result in dental crowding.

4. Crowding can also be caused by the size and shape of the teeth being larger or different than normal.
5. Crowding can result from the early loss of deciduous teeth causing the neighboring teeth to drift into the edentulous space.
6. Delayed crowding of the mandibular incisors may be caused by delayed mandibular development. The lower incisors in this instance shift distally and get congested due to the mandible's delayed growth.
7. The issue of crowding appears to extend beyond the size of the tooth. There have been several cases which demonstrated that both the arches that were well managed in early adolescence frequently display crowding as adults. This problem might still persist following an effective orthodontic treatment [5].

Dental crowding is more common in the anterior aspect of the arches (central incisor, lateral incisor, and canine), while premolar and molar crowding is less common [6]. When present in the anterior portion of the dental arch, dental crowding is more upsetting to patients because it frequently impairs their ability to speak and smile, making them feel embarrassed in public [3].

In addition to causing calculus buildup, dental cavities, rapid tooth loss, and gum recession, crowding is also quite harmful for overall oral health. Correcting the misalignment is therefore crucial for better overall dental health as well as for cosmetic reasons [7].

The approach outlined by Little (1975) was utilized to determine whether or not there was incisor crowding. Little, 1975 used the irregularity index, which is the total millimeter distance between each tooth's contact point and the contact point it should touch, to define the degree of incisor crowding [3].

Since there was a large sample size in the current study, it was not possible to measure the extent of each of incisor crowding (irregularity index II), but Little (1975) noted that the slipping of any incisor contact indicated whether or not there was incisor crowding. The majority of earlier clinical research on the prevalence of crowding used the change of the contact point between two teeth as a sign of crowding [3].

There are several factors that bring about dental crowding at the time of emergence of the secondary dentition which include, the placement of the permanent tooth germs, the time of the exfoliation of primary teeth and eruption of the successor teeth, the sequence of the transition of dentition from primary to permanent, the pressure of soft tissues, and the placement of the opposing teeth [6].

Obtaining useful data for analyzing the prevalence of dental crowding is the prerequisite for developing any future dental care programmes in society [3].

For the treatment of dental crowding, orthodontic treatment employs a wide variety of tools and devices, known as orthodontic appliances, for obtaining more space on the arches, for teeth alignment, occlusion and facial aesthetics.

Dental crowding can be treated with conservative methods and minimal expense if it is discovered in the early stages of mixed dentition however, when identified in adolescents, the kind of intervention is different and more involved from an orthodontic and surgical standpoint [8].

According to the present study, out of 4552, 1288 (28.3%) people had crowding whereas 3264 people (71.7%) had no crowding.

A similar study was done by Togoo *et al.* on the prevalence of crowding in incisors among 13-16-year-old boys in a school

in Abha City, Saudi Arabia where 87.1% of the sample had incisor crowding of differing degrees, and 12.9% of the total studied group had well aligned incisors in both maxillary and mandibular arches [3].

There was a study done in the Kabul Dental Hospital, Kabul, Afghanistan by Erfan *et al.* on the prevalence of dental crowding, which was found to be 59.1%, with the highest incidence in the lower jaw (28.6%) [5].

In a study done by Zegan *et al.* in the North-East part of Romania, prevalence was determined based to the severity of dental crowding, Results showed 118 (28%) cases of mild dental crowding, 228 (54%) cases of moderate dental crowding and 76 (18%) cases of severe dental crowding [8].

In a study done by Al-Hummayani, in some schools in different districts of Jeddah city, among the 1064 female students, the overall percentage distribution of incisor crowding was such that the 81.4% of the study population had varying degrees of incisor crowding. Whereas, 18.6% of the total study population had properly aligned incisors in both of the arches. Similar results came up in the studies done by others like Haynes S., 1970 and Hill P. Al. 1992 in UK, Brunelle *et al.* 1996 in U.S. and Bryan Jones W. 1987 in Saudi Arabia [9].

However, in a study done by Kumar *et al.* in the Chettinad Health City, Chennai among 600 students, aged 17-22 years, in which 306 were girls and 294 were boys, crowding was observed in 18.3% of the studied population [4].

Similarly, in Nigeria, the prevalence of crowding in incisors in 617 Nigerian school-going children, aged 10-19 years, reported by Isiekwe in 1983 was found to be very low, of about 12.9%.

Isiekwe, stated that the low prevalence of incisor crowding in black Africans could be due to their broad arches and favorable dento-alveolar ratio [9].

In another study done by Shigenobu *et al.* in Tokyo Medical and Dental University Hospital, the dental crowding patterns in the lower arch came out to be higher in the anterior region as compared to the premolar and molar region, which was significantly low [6].

This difference in the findings of the mentioned studies could be attributed to the different racial and ethnic origins of the populations.

Conclusion

The present study shows some interesting differences in the prevalence of dental crowding compared to other similar studies due to racial and ethnic differences. The prevalence of dental crowding in the population of Hyderabad is of significance. More such studies in larger sample sizes are required to gauge the irregularity index and to evaluate the degree of crowding that needs orthodontic therapy. Proper attention should be given on preventive and interceptive orthodontic services for the timely management of such malocclusions.

Conflict of Interest

There are no conflicts of interest.

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