Prevelence of Malocclusion Among Kanpur Adolescents

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ABSTRACT

Background: The objective of the study is to assess the prevalence of malocclusion and orthodontic treatment needs among 12-19 years old adolescents of Kanpur, India.

Methods: The sample consisted of 1450 subjects in the age group of 12-19 years randomly selected from the OPD of Rama dental college . Occlusal anteroposterior relationships were assessed based on the Angle's classification. Also various malocclusion features associated with class I malocclusion according to Dewey's modification were assessed.

Results : Angle's Class I malocclusion was found to be the most common malocclusion with 61.93 % followed by 8.82 % Angle's class II and 0.48 % Angle's class III. Crowded incisors was found to be most common finding . No significant gender differences were found.

Conclusion: The results give a pattern of malocclusion in orthodontic patients and may provide a base line data for planning awareness programs, preventive and interceptive orthodontic services.

INTRODUCTION

Occlusion is defined as the relationship of the maxillary and mandibular teeth as they are brought into functional contact; while malocclusion is the state of any deviation from the normal or ideal occlusion, as defined in the Glossary of Orthodontic Terms .[1] Malocclusion is an appreciable deviation from the ideal occlusion that may be considered aesthetically unsatisfactory (Houston, et al., 1992) [2] Malocclusions feature the third highest prevalence among oral pathologies, second only to tooth decay and periodontal disease, and therefore rank third among worldwide Public Health dental disease priorities. According to the World Health Organization, the main oral diseases should be subjected to periodic epidemiological surveys for planning and providing prevention and treatment .[3]

Malocclusions are the result of orofacial adaptability to various etiological factors, which result in various implications such as psychosocial problems related to impaired dentofacial aesthetics, disturbances of oral function, such as mastication, swallowing and speech and greater susceptibility to trauma and periodontal disease.[4] According to World Health Organization (WHO), the main oral diseases should be subjected to periodic epidemiological surveys. The epidemiological data on orthodontic treatment need is of interest for dental public health programs, clinical treatment, screening for treatment priority, resource planning and third party funding. Appraisal of distribution of malocclusion in childhood can facilitate efforts to prevent such a disorder and its consequences and make it possible to reduce the complexity of costly orthodontic treatment. Furthermore, this knowledge might help to minimize or eliminate future treatment need. [5] A systematic and well–organized dental care program for any target population in a community requires some basic information, such as the prevalence of the condition.

In more developed parts of the world, where the specialties of Orthodontics and Pedodontics have been established, adequate basic information is available on the prevalence of this condition. [6- 14]

MATERIALS AND METHODS

A total of 1450 individuals were prospectively examined between January 2015 and March 2016 in Rama dental, Kanpur . Study subjects were selected consecutively for inclusion in the study because they were seen in the OPD at Rama dental hospital for dental screening. All male and female patients who met the following inclusion criteria were included in the sample:

(1) age 12 to 19 years,

(2) secondary dentition present with no remaining deciduous teeth,

(3) no multiple missing teeth,

(4) no previous history of orthodontic treatment.

All the patients were of Kanpur origin .Each examination took place while the subject was sitting in a dental chair. A qualitative analysis with Angle's classification was used to describe the anteroposterior relationship of the maxillary and mandibular first molars during maximum intercuspation. The subjects were examined   using sterile mouth mirror and flash light. All occlusal relationships were evaluated at a centric occlusion position, which was achieved by asking the subject to swallow and then to bite on his or her teeth together. The occlusion was then classified into normal occlusion or malocclusion using the first permanent molars as described by Angle. The cheeks were fully

retracted to obtain a direct lateral view of the dentition in occlusion on each side. Children with class I molar relationship, minimal overbite and overjet, proper alignment, and minimal crowding were classified as normal.

In subjects with class I malocclusion, class I molar relation existed with one or more of these characteristics:

Dewey type I   crowded incisors or labial canines, or both,

Dewey type II protruded maxillary incisors ,

Dewey type III anterior end to end occlusion or anterior cross bite or both ,

Dewey type IV unilateral or bilateral posterior cross bite ,

Dewey type V   mesial drift of molars ,

The prevalence of these features were assessed in subjects showing Class I malocclusion.

The collected data were tabulated and analyzed statistically.

RESULTS
Among a total of 1450 individuals were prospectively examined between 2015 and 2016 in Kanpur .

Occlusal classification	N	%
Normal occlusion	497	29.44
Class I	898	61.93
Class II division I	99	6.82
Class II division II	19	1.31
Class III	7	0.48
TOTAL	1450	100

TABLE 1: *representing occlusal classification of the subjects and their percentage*

Occlusion	Male (n)	Female (n)
Normal occlusion	210	217
Class I	442	456
Class II division I	50	49
Class II division II	11	8
Class III	3	4
Total	716	734

TABLE 2: *representing gender distribution of occlusal variations*
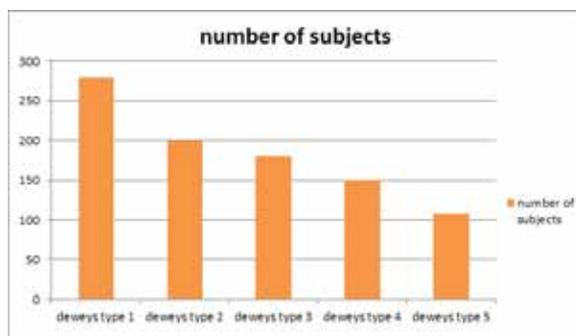
Fig. 1: *representing   distribution of types of class I malocclusion according to Dewey's modification*

Table 1 shows the occlusal classifications of the subjects. Normal occlusions were found in 29.4% of subjects, and 70.6 % had malocclusions. Table 2 shows the gender distribution of normal occlusion along with various forms of malocclusions.

Figure 1 shows the distribution of various types of class I malocclusion   according to Dewey's modification of Angle's classification. Crowded incisors was found to be most common finding in subjects with class I malocclusion where $n=280$ followed by protruded maxillary incisors where $n=200$, anterior cross bite where $n=180$, posterior cross bite where $n=150$ and mesial drift of molars where $n= 108$.

DISCUSSION
The reported prevalence of malocclusion in different parts of the world varies from 39% to 93%   [14]. The evaluation of orthodontic patients may give valuable information for planning orthodontic treatment. The prevalence of malocclusion varies from one geographical area to another and differs from one country to another country and even from one city to another city. Angle's classification[15] is useful for easy documentation and provides a common channel of communication among dental professionals. It is an easy and rather accurate way to categorize malocclusions, and is globally used in dental profession.

Class I malocclusion constituted the major proportion of malocclusion which was found in 61.9 % of the studied population followed by 8.1 % Angle's class II and 0 .48 % Angle's class III among the orthodontic patients examined   which is in agreement with the other studies. Proffit et al [16] found in untreated White Americans of 8 - 50 years age, the Angle's Class I malocclusions was most prevalent, i.e., 52.2%, while 42.4% were Angle's Class II and less than 5% were Angle's Class III malocclusions. Another study on the pattern of malocclusion in Africa (Nigeria) [17] showed Angle's Class I at 76.5%, Class II 15.5% and Class III 8.0%.

No significant difference was found between boys and girls neither in the overall prevalence of malocclusion nor in various forms of malocclusion. Findings of this present study are in disagreement with the study by Sandesh Phaphe in which females exhibited significantly higher prevalence rates of class III molar relationship and overjet .[18] The present study evaluated various malocclusion features associated with class I malocclusion according to Dewey's modification of Angle's classification. Crowded incisors was found to be most common finding in subjects with class I malocclusion followed by protruded maxillary incisors, anterior cross bite, posterior cross bite and mesial drift of molars in descending order.

Conclusion
The present study provides baseline information to underpin the implementation of oral health promotion programs. To meet the orthodontic treatment needs, the Public Health Dentistry and Orthodontic Departments of dental colleges should undertake imperative steps in the initiation and implementation of a comprehensive agenda. There is a strong need of multicentric, epidemiological survey to find out the prevalence & causes of malocclusion in Kanpur population. There is also a need to inculcate the orthodontic services in the current public health policies to fill the lacunae. A sustained effort of the public private collaboration resulting in a creative synergy capitalizing on the talent and resources of each partner can have a beneficial role.

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