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Pattern of occlusion and malocclusion in children: A clinical study

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Abstract
Background: The esthetic plays an important role in the appearance of the individual. The presence of malocclusion poses difficulty in gaining confidence in life. The present study was conducted to assess the type of occlusion and malocclusion in children.
Materials & Methods: This study was conducted on 530 children age ranged 7-14 years of both genders. Children were classified into normal occlusion, Class I malocclusion, Class II div I and class II div II and class III malocclusion. Dewey modification such as type I, type II, type III, type IV and type V was considered.
Results: Out of 530 subjects, boys were 280 and girls were 250. The difference was non- significant (P-0.12). Age group 7-10 years had 55 boys and 60 girls. Age group 10-12 years had 105 boys and 145 girls. Age group 12-14 years had 120 boys and 45 girls. The difference was significant (P-0.01). Type of focclusion was normal (boys- 30, girls- 25), class I malocclusion (boys- 120, girls- 84), class II div I (boys- 90, girls- 95), class II div II (boys- 30, girls- 31) and class III malloccusion (boys- 10, girls- 15). The difference was significant ($P<0.05$). Dewey type I was seen in 52 subjects, type II in 40, type III in 50, type IV in 28 and type V in 34 subjects. The difference was significant ($P<0.05$).
Conclusion: Author found that class I malocclusion was predominantly found in children followed by class II div I. Maximum cases were seen in age group 10-12 years.

Keywords: Esthetic, malocclusion, occlusion

Introduction

Malocclusions feature the third highest prevalence among oral pathologies, second only to tooth decay and periodontal disease. While there are evidence that certain features such as stress, traumatic deep overbite, unprotected incisors and impacted teeth may adversely affect the longevity of the dentition. A malocclusion is a misalignment or incorrect relation between the teeth of the two dental arches when they approach each other as the jaws close. The term was coined by Edward Angle, the "father of modern orthodontics", as a derivative of occlusion. Occlusal and dentofacial characteristics affect the physiological functions of the facial appearance of a human. Therefore, dentofacial deformities and deviations from normal occlusal relationship can cause severe problems for individuals, including difficulties in mastication, speech problems, gingival traumas, pain, temporomandibular disorders, and diminished self-esteem and self-confidence due to perceived poor appearance [1].
The epidemiological data on the prevalence of malocclusion is an important determinant in planning appropriate levels of orthodontic services. The occurrence of occlusal anomalies varies between different countries, ethnic and age groups. The incidence of malocclusion has been reported to vary from 11% up to 93% [4]. The prevalence of malocclusion in India varies from 20 to 43% [2].
Children are the future of a nation and the strength of a nation lies in a healthy, protected, educated and well developed child population as these will grow up to be productive citizens of the country. Increased concern for dental appearance during childhood and adolescents to early adulthood has been observed. The social interactions that have a negative effect on self-concept, career advancement and peer group acceptance have been associated with unacceptable dental appearance. In general, societal forces define the norms for acceptable, normal and attractive physical appearance [3]. The present study was conducted to assess the prevalence of malocclusion and orthodontic treatment needs in children.

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Materials & Methods

This study was conducted in the department of Pedodontics. It included 530 children age ranged 7-14 years of both genders. Parents of children were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.

General information such as name, age, gender etc. was recorded. All children were examined for the presence of normal occlusion with class I molar relationship, class I malocclusion, Class II div I and class II div II and class III malocclusion. Dewey type I involved crowded incisors or labial canines, or both, Dewey type II included protruded maxillary incisors, type III was anterior end to end occlusion or anterior cross bite or both, type IV was unilateral or bilateral posterior cross bite, type V was mesial drift of molars, anterior or posterior open bite, deep anterior overbite. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.
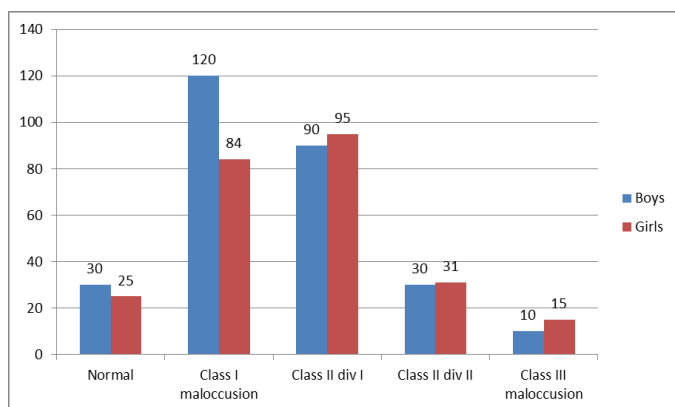
Results

Table 1: Distribution of subjects

Total- 530		
Boys	**Girls**	**P value**
280	250	0.12

Table 1 shows that out of 530 subjects, boys were 280 and girls were 250. The difference was non- significant (P-0.12).

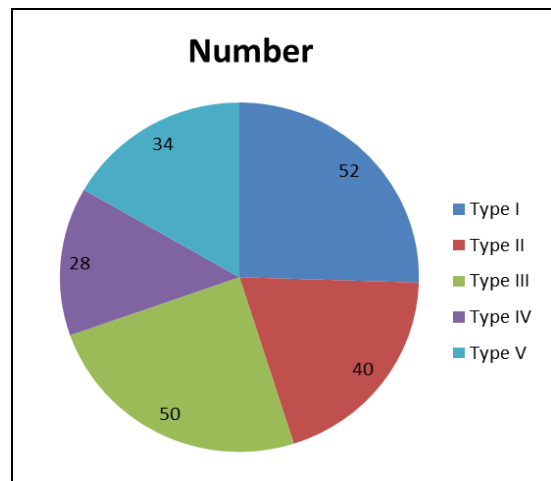**Table 2:** Age wise distribution of subjects

Age (years)	Boys	Girls	P value
7-10	55	60	
10-12	105	145	0.01
12-14	120	45	
Total	280	250	

Table 2 shows that age group 7-10 years had 55 boys and 60 girls. Age group 10-12 years had 105 boys and 145 girls. Age group 12-14 years had 120 boys and 45 girls. The difference was significant (P-0.01).

Graph 1: Type of malocclusion

Graph 1 shows that type of focclusion was normal (boys- 30, girls- 25), class I malocclusion (boys- 120, girls- 84), class II div I (boys- 90, girls- 95), class II div II (boys- 30, girls- 31) and class III malocclusion (boys- 10, girls- 15). The difference was significant ($P<0.05$).

Graph 2: Dewey's modification

Graph 2 shows that Dewey type I was seen in 52 subjects, type II in 40, type III in 50, type IV in 28 and type V in 34 subjects. The difference was significant ($P<0.05$).

Discussion

The presence of ideal occlusion is very difficult to find. The presence of malocclusion such as class I, class II div I, II and class III are quite common. Malocclusions are classified into two major groups: dental and skeletal malocclusions, depending on skeletal relationships. Severe malocclusions are frequently skeletal and often referred to as 'dentofacial deformities [4] The present study was conducted to assess the prevalence of malocclusion and orthodontic treatment needs in children.

In this study, out of 530 subjects, boys were 280 and girls were 250. We observed that maximum children were from age group 10-12 years (boys- 105, girls- 145) followed by 12-14 years (boys- 120, girls- 45) and 8-10 years (boys- 55, girls-60). This is in agreement with Sogi [5]

We found that type of focclusion was normal, class I malocclusion, class II div I, class II div II and class III malocclusion. Maximum children had class II div I malocclusion (boys- 110, girls- 125). This is in accordance to Sclare [6] We found that dewey type I was seen in 60 subjects, type II in 45, type III in 55, type IV in 34 and type V in 48 subjects. Similar results were seen in study by Onyeaso *et al*. [7]

Extra teeth, lost teeth, impacted teeth, or abnormally shaped teeth have been cited as causes of malocclusion. A small underdeveloped jaw, caused by lack of masticatory stress during childhood, can cause tooth overcrowding. Ill-fitting dental fillings, crowns, appliances, retainers, or braces as well as misalignment of jaw fractures after a severe injury are other causes. Tumors of the mouth and jaw, thumb sucking, tongue thrusting, pacifier use beyond age, and prolonged use of a bottle have also been identified as causes [8].

The epidemiological data on the prevalence of malocclusion is an important determinant in planning appropriate levels of orthodontic services. Other kinds of malocclusions can be due to tooth size or horizontal, vertical, or transverse skeletal discrepancies, including skeletal asymmetries. Long faces may lead to open bite malocclusion, while short faces can be coupled to a Deep bite malocclusion [9].

With increasing interest in the early detection and treatment of malocclusion and a corresponding emphasis on preventive procedures, it would be beneficial to collect more information on patients at younger age levels. There are many other more common causes for open bites and likewise for deep bites.

Upper or lower jaw can be overgrown or undergrown, leading to Class II or Class III malocclusions that may need corrective jaw surgery or orthognathic surgery as a part of overall treatment, which can be seen in about 5% of the general population [10] Access to public orthodontic treatment is mainly based on occlusal indices, even though the measurements by clinicians may differ from patients' reasons to seek treatment.

Conclusion
Most of the children had class I malocclusion followed by class II div I. Age group 10-12 years maximum number of children with malocclusion.

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