

Original Article

Analysis of Malocclusion among 8-14 years Old School Children: A Cross-Sectional Study

Vasant Devagiri

Department of Orthodontics, College of Medical Sciences Bharathpur, Nepal

ABSTRACT:

Background: 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. The present study was conducted to assess the prevalence of malocclusion and orthodontic treatment needs in children. **Materials & Methods:** This study was conducted in the department of Orthodontics on 632 children age ranged 8-14 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 632 subjects, boys were 330 and girls were 302. The difference was non- significant (P>0.1). Age group 8-10 years had 75 boys and 70 girls. The difference was non- significant (P>0.1). Age group 10-12 years had 120 boys and 180 girls. The difference was significant (P<0.05). Age group 12-14 years had 135 boys and 52 girls. The difference was significant (P<0.01). Type of occlusion was normal (boys- 32, girls- 30), class I malocclusion (boys- 140, girls- 102), class II div I (boys- 110, girls- 125), class II div II (boys- 38, girls- 31) and class III malocclusion (boys- 10, girls- 15). The difference was significant (P<0.05). 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. The difference was non- significant (P>0.05). **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. **Key words:** Deep overbite, Malocclusion, Orthodontic.

Corresponding author: Dr. Vasant Devagiri, Department of Orthodontics, College of Medical Sciences Bharathpur, Nepal

This article may be cited as: Devagiri V. Analysis of Malocclusion among 8-14 years Old School Children: A Cross-Sectional Study. J Adv Med Dent Sci Res 2018;6(1):23-26.

INTRODUCTION

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

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.²

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.³

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%. The present study was

conducted to assess the prevalence of malocclusion and orthodontic treatment needs in children.

MATERIALS & METHODS

This study was conducted in the department of Orthodontics. It included 632 children age ranged 8-14 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 in their respective schools by a single orthodontist. Children with history of extraction were excluded.

Children were classified into normal occlusion with class I molar relationship, minimal overbite and overjet, proper alignment, and minimal crowding. Angle’s malocclusion was classified as Class I malocclusion, Class II div I and class II div II and class III malocclusion. Dewey modification was also considered. 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 I Distribution of subjects

Total- 632		
Boys	Girls	P value
330	302	0.1

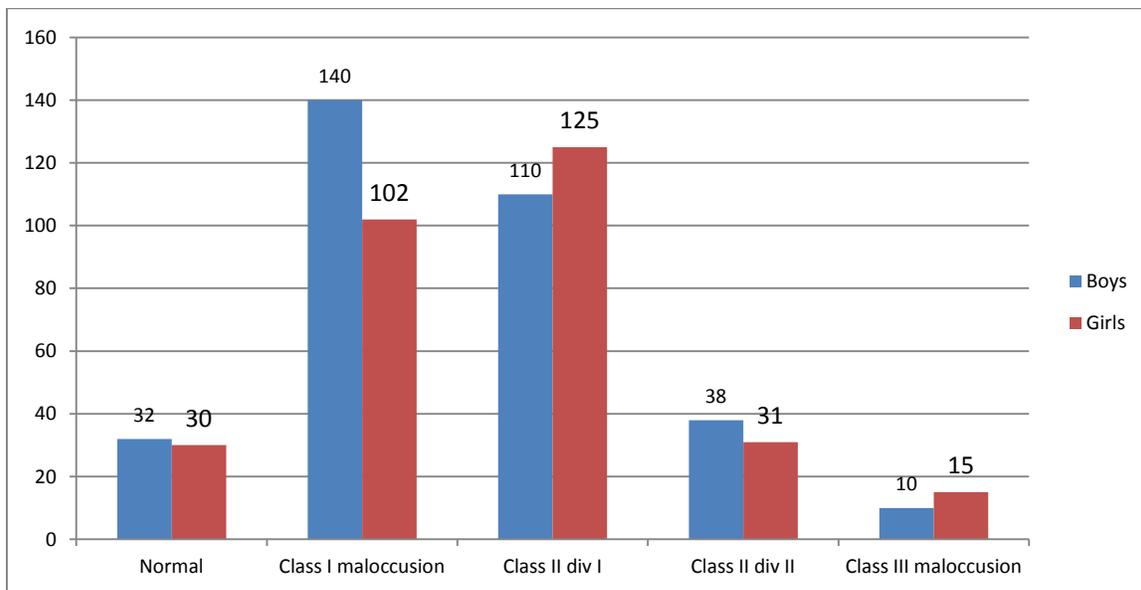
Table I shows that out of 632 subjects, boys were 330 and girls were 302. The difference was non- significant (P-0.1).

Table II Age wise distribution of subjects

Age (years)	Boys	Girls	P value
8-10	75	70	1
10-12	120	180	0.05
12-14	135	52	0.01
Total	330	302	

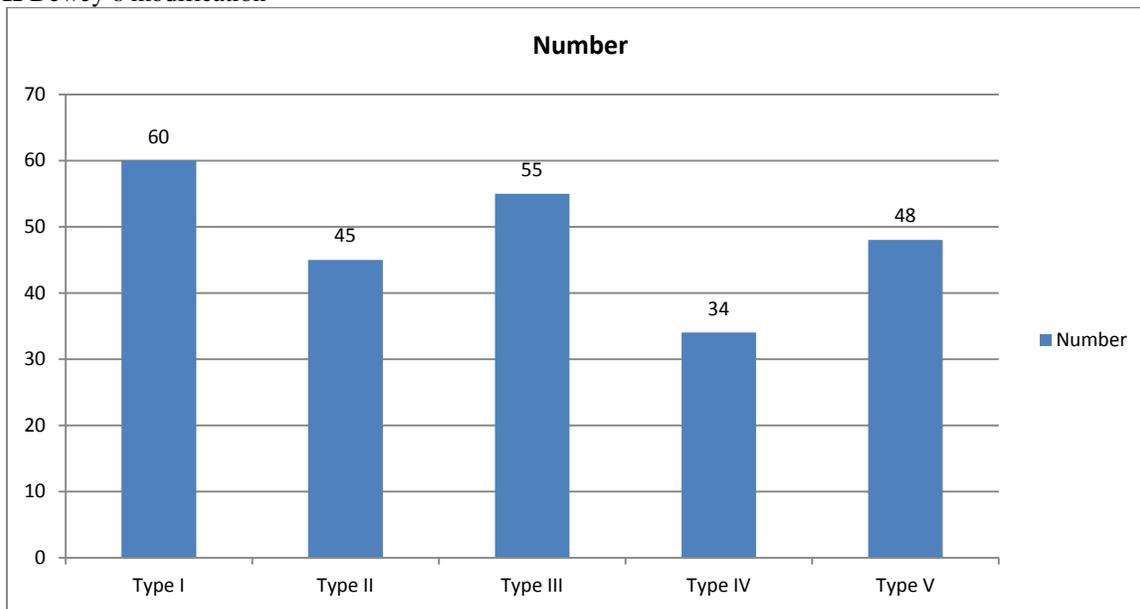
Table II shows that age group 8-10 years had 75 boys and 70 girls. The difference was non- significant (P-1). Age group 10-12 years had 120 boys and 180 girls. The difference was significant (P-0.05). Age group 12-14 years had 135 boys and 52 girls. The difference was significant (P-0.01).

Graph I Type of malocclusion



Graph I shows that type of malocclusion was normal (boys- 32, girls- 30), class I malocclusion (boys- 140, girls- 102), class II div I (boys- 110, girls- 125), class II div II (boys- 38, girls- 31) and class III malocclusion (boys- 10, girls- 15). The difference was significant ($P < 0.05$).

Graph II Dewey's modification



Graph II shows 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. The difference was non-significant ($P > 0.05$).

DISCUSSION

Malocclusion can be defined as appreciable deviation from normal or ideal occlusion. 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'. Dentofacial deformities have been described as deviations from normal facial proportions and dental relationships severe enough to be handicapping.⁵

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.⁶ The present study was conducted to assess the prevalence of malocclusion and orthodontic treatment needs in children.

In this study, out of 632 subjects, boys were 330 and girls were 302. We observed that maximum children were from age group 10-12 years (boys- 120, girls- 180) followed by 12-14 years (boys- 135, girls- 52) and 8-10 years (boys- 75, girls- 70). This is in agreement with Massler.⁷

We found that type of malocclusion 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 Foster.⁸ 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 Roberts.⁹

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. The severity of malocclusion and treatment outcome is usually assessed with occlusal and cephalometric measurements. 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.¹⁰

There are many other more common causes for open bites (such as tongue thrusting and thumb sucking), and likewise for deep bites. Upper or lower jaw can be overgrown or under grown, 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.

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.

REFERENCES

1. Nainani JT, Relan S. Prevalence of malocclusion in school children of Nagpur Rural Region—An epidemiological study. J Ind Dent Association 2011; 5: 865-67.
2. Kumar P, Londhe SM, Kotwal A, Mitra R. Prevalence of malocclusion and orthodontic treatment need in schoolchildren dependent on armed forces personnel - An epidemiological study. Med J Armed Forces 2012;1-6.
3. Sogi GM, Baskar DJ. Dental caries and oral hygiene status of school children in Davangere related to their socioeconomic levels. An epidemiological study. J Indian Soc Pedod Prev Dent 2002; 20:152-57.
4. Freitas KMS, Freitas DS, Valarelli FP, Freitas MR, Janson G. PAR evaluation of treated class I extraction patients. Angle Orthodontist 2008;78:270-74.
5. Altemus L. The frequency of the incidence of malocclusion in American Negro children aged 12-16. Angle Orthod 1959; 4:189-200.
6. Sclare AR. Othodontics and the school child: a survey of 680 children. Br Dent J 1945; 79:278-80.
7. Massler M, Frankel J. Prevalence of malocclusion in children aged 14 to 18 years. Am J Orthod 1998; 10:751-768.
8. Foster TD, Day AJW. A survey of malocclusion and the need for orthodontic treatment in a Shropshire school population. Br J Othod 2002; 73-78.
9. Roberts EE, Goose DH. Malocclusion in a North Wales population. Br Dent J 1999; 6:17-20.
10. Onyeaso CO. Prevalence of malocclusion among adolescents in Ibadan, Nigeria. Am J Orthod Dentofacial Orthop 2004; 5: 604-607.

Source of support: Nil

Conflict of interest: None declared

This work is licensed under CC BY: *Creative Commons Attribution 3.0 License*.

@Society of Scientific Research and Studies