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Original Article

Prevalence of Class 2 Division 1 malocclusion among school children

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ABSTRACT:

Background: Malocclusion is a continuum ranging from an ideal occlusion to considerable deviation from normal. This study was conducted to determine the prevalence of malocclusion among school children. **Materials & methods:** A total of 200 subjects were enrolled. 120 were boys and 80 were girls. The age was between 8 and 10 years. The examiner used sterile mouth mirror, and probe. The malocclusion was divided into class I, class II division 1 and class II division 2. The results were analysed using SPSS software. **Results:** A total of 200 subjects were enrolled. Normal occlusion was found in 65 of the students representing 32.5% of the total sample. 83 children comprising 41.5% of the total sample had Class I occlusal relationship. **Conclusion:** The prevalence of malocclusion was 67.5%, and in Class II Division I malocclusion (23.5%).

Keywords: Malocclusion, Prevalence, Normal occlusion.

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INTRODUCTION

The WHO considers malocclusion one of the most important oral health problem, after caries and periodontal disease. ¹ Its prevalence is highly variable and is estimated to be between 39% and 93% in children and adolescents. ^{2,3} This prevalence range is very wide and heterogeneous. This inhomogeneity may be due to ethnic and age differences of patients considered in studies, assessing the prevalence of malocclusion. ⁴ A malocclusion is defined as irregularity of the teeth or a molar relationship between the dental arches beyond the range of what is accepted as normal. ⁵ Malocclusion is one of the most common dental problems as well as dental caries, periodontal disease, and dental fluorosis. ⁶ Also, maloccluded dentition can cause disturbances in oral function and psychosocial problems due to impaired dentofacial. ⁷

Malocclusion has a multifactorial aetiology, being caused by hereditary factors, environmental factors or a combination of both. ⁸ Genetically determined factors exert their influence during growth and can, therefore, lead to development of a malocclusion. ⁹

These influences can be combined with aetiological factors such as bad habits. In cases of sucking habits the child interposes his finger, usually the thumb, between the dental arches causing the tongue to move downwards. The tongue is unable to reach its correct position on the palate, preventing it from developing transversely; moreover, the position of the thumb against the front teeth leads to their prominence. Children tend to develop an anterior open bite and posterior cross-bite due to lack of palatal development. ¹⁰ Posterior teeth may also extrude, caused by the lack of occlusal contact due to the interposition of the finger. ⁸ Lip or cheek sucking also causes problems with occlusion and correct skeletal-facial development. In patients with sucking of the lower lip there is contraction of the lower orbicularis and mental muscle with subsequent proinclination of the maxillary teeth, retroinclination of the mandibular teeth, increased overjet, irregularity of the lower incisors. ¹¹ Hence, this study was conducted to determine the prevalence of malocclusion among school children.

MATERIALS & METHODS

A total of 200 subjects were enrolled. 120 were boys and 80 were girls. The age was between 8 and 10 years. The first permanent molars were present in all the candidates and had no previous history or exposure to any kind orthodontic treatment. An informed consent from the children and their parents was taken. The examiner used sterile mouth mirror, and probe. The children were asked to swallow and then to bite on his or her teeth together so as to maintain a centric occlusion position after which the occlusal relationship was evaluated. The occlusion was checked. With the first permanent molars as guidance, the occlusion was classified as described by Angle into normal occlusion or malocclusion. The malocclusion was divided into class I, class II division 1 and class II division 2. Chi-squared test was done. The results were analysed using SPSS software.

RESULTS

A total of 200 subjects were enrolled. Normal occlusion was found in 65 of the students representing 32.5% of the total sample. 83 children comprising 41.5% of the total sample had Class I occlusal relationship. 47 children representing 23.5% of the sample were found to be have Class II Division I occlusal relationship, whereas 5 children accounting for 2.5% of the sample had Class II Division II occlusal relationship.

Table 1: Occlusal Classification

Occlusal Classification	N (%)
Normal occlusion	65 (32.5)
Class 1	83 (41.5)
Class 2 division 1	47 (23.5)
Class 2 division 2	5 (2.5)
Total	200 (100)

There was an equal distribution of various malocclusions among the groups. No significant statistical differences were seen among the two groups as tested by the Chi-square test by taking $P < 0.05$ as statistically significant.

Table 2: gender distribution

Occlusion	Boys	Girls
Normal occlusion	40	25
Class 1	52	31
Class 2 division 1	25	22
Class 2 division 2	3	2
Total	120	80

DISCUSSION

Malocclusion is one of the most common dental problems in mankind. Maloccluded teeth can cause 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. Numerous studies have been published regarding the prevalence of malocclusion in various populations. The results have shown wide variations. Differences in

the age ranges of the populations studied, the number of subjects examined and differences in the registration methods are probably the most important factors explaining these variations.¹² Hence, this study was conducted to determine the prevalence of malocclusion among school children.

In the present study, a total of 200 subjects were enrolled. Normal occlusion was found in 65 of the students representing 32.5% of the total sample. 83 children comprising 41.5% of the total sample had Class I occlusal relationship. 47 children representing 23.5% of the sample were found to be have Class II Division I occlusal relationship, whereas 5 children accounting for 2.5% of the sample had Class II Division II occlusal relationship. A study by Narayanan RK et al, the results revealed that the overall prevalence of malocclusion was 83.3%. Of this, 69.8% of the children had Angle's class I malocclusion, 9.3% had class II malocclusion (division 1 = 8.85%, division 2 = 0.5%) and 4.1% had class III malocclusion; 23.2% showed an increased overjet (>3 mm), 0.4% reverse overjet, 35.6% increased overbite (>3 mm), 0.29% open bite, 7.2% crossbite with 4.6% crossbite of complete anterior teeth, 63.3% deviation of midline, 0.76% midline diastema and 3.25% rotated tooth. No significant differences in gender distributions of malocclusions were noted except for increased overjet and overbite.¹³

In the present study, there was an equal distribution of various malocclusions among the groups. No significant statistical differences were seen among the two groups as tested by the Chi-square test by taking $P < 0.05$ as statistically significant. Another study by Das UM et al, showed that about 71% of the subjects had malocclusion. Class I malocclusion constituted the major proportion of malocclusion which was found in 62% of the studied population. No significant difference was found between boys and girls neither in the overall prevalence of malocclusion nor in various forms of malocclusion. Crowded incisors was found to be most common finding in subjects with class I malocclusion.¹⁴ Albakri FM et al, the Molar Class I relation involved the highest percentage of the sample (71.2%) while Class II relation involved only 23% which was four times of Class III (5.8%). The maxillary arch crowding was present in 23.2% of the sample which was double than that of spacing. Whereas, the mandibular arch crowding was present in 28% of the sample which was three times more than spacing (8.8%). The open bite was present in 4% of the sample while deep bite was present in 9.6%.¹⁵

Class II malocclusion depicted by Sridharan et al¹⁶ in Tumkur was (10%) and Muppa et al¹⁷ in Andhra Pradesh (9.95), India. This is found to be higher than the results of Mtaya et al¹⁸ in Tanzania (4.4%) and Shrestha et al¹⁹ in Kathmandu (2.5%) and was lower when compared with the studies of Abu Alhaija et al²⁰ in Jordan (18.8%) and Phaphe et al²¹ in Bagalkot, India (30.1%). Malocclusion is a continuum ranging

from an ideal occlusion to considerable deviation from normal.²² It has large impact on individual and society in terms of discomfort, quality of life and social and functional limitations. The etiology of malocclusion may be genetic, environmental or more commonly a combination of them. In addition, local factors such as adverse oral habits, anomalies in number, form and developmental position of teeth can also cause malocclusion.²³ Early interception and early correction of these malocclusions will prevent their progression to its full form and will exclude factors interfering with the regular development of the dental arches.²⁴

CONCLUSION

The prevalence of malocclusion was 67.5%, and in Class II Division I malocclusion (23.5%).

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