

Pattern of Malocclusion in Patients Seeking Orthodontic Treatment at Marks Medical College, Dental Unit

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Abstract

Background: Malocclusion is defined as lack of correct relation between upper and lower teeth while maximum intercuspation. Malocclusion is the highest public health problem in the world because of its high prevalence. Malocclusion can cause dental caries, periodontal disease and aesthetic problems. Malocclusion is the most common dentofacial abnormality found in human population. However, the awareness for orthodontic treatment is increasing.

Objective: The aim of this research was to evaluate pattern of malocclusion in patients undergoing orthodontic treatment at Marks Medical College Dental Unit of Mirpur, Dhaka, Bangladesh.

Materials and Methods: This cross-sectional study included orthodontic patients who visited the department of Orthodontics and Dentofacial Orthopedics in Marks Medical College Dental Unit and Hospital from January 2021 to December 2022. Three hundred and fifty preoperative study casts (2021 January to 2023 December) of orthodontic patients aged from 12-40 years were selected from 680 patient's records in the department of orthodontics of Marks medical college Dental Unit. Standard protocol of Angle's classification of malocclusion was used to classify malocclusion and its traits were recorded. Data were entered in Microsoft Excel and descriptive statistics were calculated.

Results: The prevalence for malocclusion were 60% (210) of Angle's class I, 28.86% (101) of Angle's class II and 11.14% (39) of Angle's class III malocclusion. Among various attributes of malocclusion, crowding was the most common trait (213, 60.86%). Spacing was found in 129 (36.86%) subjects. Increased overjet and deep bite were found in 77 (22%) and 70 (20%) respectively.

Conclusion: Angle's class I malocclusion is most prevalent malocclusion seen followed by Angle's class II and Angle's class III.

Keywords: Angle's classification, malocclusion, orthodontic treatment, pattern.

Introduction

Malocclusion, defined as an improper relationship between teeth in the opposite jaws, has been a prevalent disorder in recent decades.¹ As stated by Angle "occlusion is the normal relation of the occlusal planes of the teeth when the jaws are closed" and malocclusion as per Dental Practice Board is justified as an abnormal occlusion, in which teeth are not in a normal position in relation to adjacent teeth in the same jaw and/or the opposing teeth when the jaws are closed.²

Prevalence of malocclusion varies in different parts of the world among different populations. Knowledge about the distribution of different malocclusions may help orthodontic practitioners in better understanding of the extent of malocclusion problem in a geographic location and help them in the proper orientation and management of treatment possibilities.³ There have been several studies investigating the

prevalence of various dentofacial characteristics, but only a few have been conducted on an orthodontic population.^{4,7}

The aim of this study was, therefore, to determine the prevalence of individual traits of malocclusion including sagittal molar relationship, overbite, overjet, crowding, spacing and deep bite of upper and lower jaws and other occlusal abnormalities in a sample of Bangladeshi orthodontic patients. Furthermore, the data will be useful to compare the results of this study with that of other data reported in different populations.

Materials and Methods

This cross sectional study included orthodontic patients who visited the Department of Orthodontics, Marks Medical College Dental Unit, from January 2021 to December 2022. Pre-treatment orthodontic records of 350 patients (166 were males and 184 were females) fulfilling the selection criteria were obtained and used for the study. The inclusion criteria were: i) Patients undergoing orthodontic treatment with variable pretreatment records; ii) Individuals residing in one region of Bangladesh; iii) Subjects with permanent dentition and fully erupted permanent first molar; and iv) Patients should be aged from 12- 40 years. The exclusion criteria were: i) history of previous orthodontic treatment; ii) Patients with craniofacial anomalies; iii) Patients with syndromes, severe medical histories, and developmental anomalies such as ectodermal dysplasia, cleft lip and palate, Down syndrome, extractions of any permanent teeth, prosthodontic treatment, or trauma to any tooth before the commencement of orthodontic treatment, hypodontia and hyperdontia. Angle's classification of malocclusion was used to classify the dental malocclusion

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using the study models and patient’s records by a single examiner. Several attributes of malocclusion included for the study of the nature of malocclusion were: over jet, spacing, crowding, deep bite, open bite which was measured clinically and in the study model. In addition, other problems like bimaxillary protrusion, retained deciduous teeth, cross bite, and scissor bite were also recorded. Informed consent was received prior to the clinical examination and for future use of the study cast. Data were entered to Microsoft Office Excel Sheet 2007 and analysis was done for descriptive statistics.

Results

A total of 350 patients were included in the study and female 184(52.57%) patients were more compared to males (Table 1). The present study shows the distribution of malocclusion on the basis of Angle’s classification which revealed 210 (60%) of Angle’s class I (Table 1). Among various attributes of malocclusion, crowding was the most common trait with 213 (60.86%). Spacing was found in 129 (36.86%) subjects. Then increased overjet and rest only deep bite were found in 77 (22%) and 70 (20%) respectively (Table 2). Among the participants, most of them belonged to 20-30 years age group (Table 3).

Table 1: Distribution of sample according to gender

| Gender | Class I | Class II | Class III | Overall |
|--------|-------------|-------------|------------|-------------|
| Male | 99 (47.14) | 42 (41.58) | 25 (64.10) | 166 (47.43) |
| Female | 111 (52.86) | 59 (58.42) | 14 (35.90) | 184 (52.57) |
| Total | 210 (60) | 101 (28.86) | 39 (11.14) | 350 (100) |

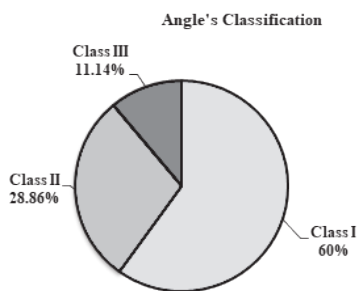


Figure 1: Shows Angle’s Class I malocclusion is most common followed by Class II & Class III

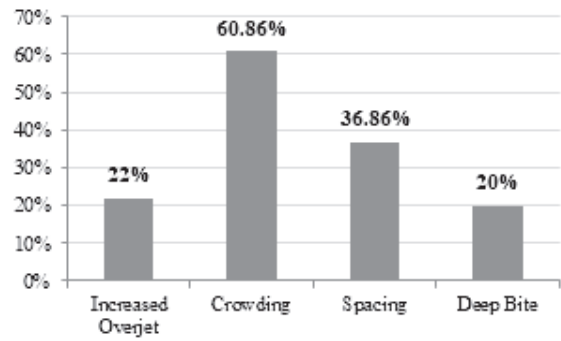
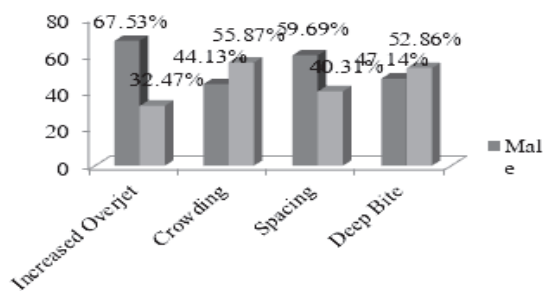


Figure 2: Shows crowding & spacing are most causes for seeking orthodontic treatment.

Table 2: Distribution of different attribute of malocclusion according to gender

| Traits | Sex | Class I | Class II | Class III | Total n (%) |
|-------------------|--------|---------|----------|-----------|-------------|
| Increased Overjet | Male | 17 | 35 | - | 52 |
| | Female | 14 | 11 | - | 25 |
| | Total | 31 | 46 | - | 77 (22) |
| Crowding | Male | 56 | 28 | 10 | 94 |
| | Female | 70 | 35 | 14 | 119 |
| | Total | 126 | 63 | 24 | 213 (60.86) |
| Spacing | Male | 42 | 24 | 11 | 77 |
| | Female | 39 | 10 | 3 | 52 |
| | Total | 81 | 34 | 14 | 129 (36.86) |
| Deep bite | Male | 25 | 3 | 5 | 33 |
| | Female | 14 | 21 | 2 | 37 |
| | Total | 39 | 24 | 7 | 70 (20) |

Table 3: Distribution of different attribute of malocclusion according to age

| Traits | Age group | Class I | Class II | Class III | Total n (%) |
|-------------------|-----------|---------|----------|-----------|-------------|
| Increased Overjet | 12-19 yrs | 17 | 19 | - | 36 |
| | 20-30 yrs | 21 | 27 | - | 48 |
| | >30 yrs | 3 | 4 | - | 7 |
| | Total | 41 | 50 | - | 91 (26) |
| Crowding | 12-19 yrs | 39 | 26 | 6 | 71 |
| | 20-30 yrs | 53 | 46 | 11 | 110 |
| | >30 yrs | 5 | 4 | 2 | 11 |
| | Total | 97 | 76 | 19 | 192 (54.86) |

| | | | | | |
|-----------|--------------|-----------|-----------|-----------|------------------------------|
| Spacing | 12-19 yrs | 17 | 18 | 5 | 40 |
| | 20-30 yrs | 49 | 29 | 8 | 86 |
| | >30 yrs | 4 | 2 | 2 | 8 |
| | Total | 70 | 49 | 15 | 134 (38.28) |
| Deep bite | 12-19 yrs | 13 | 11 | 2 | 26 |
| | 20-30 yrs | 22 | 24 | 6 | 52 |
| | >30 yrs | 7 | 3 | 1 | 11 |
| | Total | 42 | 38 | 9 | 89 (25.43) |

Discussion

This study is on pattern of malocclusion in patients undergoing orthodontic treatment at Marks Medical College Dental Unit, Dhaka. In the present study, only those patients seeking orthodontic treatment were included. This study showed that prevalent age groups of orthodontic patients were mostly 20-30 years. This result is similar to the study done by Pandey et al.⁸ It was suggested the cause could vary from self-consciousness to social and matrimonial reasons.⁹ This result is almost similar to the study done by Rahman MM et al.¹⁰ in the Dhaka Dental College Hospital. It is also similar to the study conducted by Piya et al.¹¹ at Nepal Dental College.

The results of the present study showed that females were more interested toward orthodontic treatment with the frequency of 52.57%. This study is in accordance with the study done by Acharya et al.¹ and also nearly similar to study done by Rahman et al.¹⁰ It was suggested the causes would be for marriage reason or self-consciousness.

The most frequent malocclusion was 60% of Angle's class I followed by 28.86% of Angle's class II and 11.14% of Angle's class III malocclusion. This result is similar to study done by and Piya et al.,⁸ Sharma et al. and Parajuli et al.⁹ This result is also in accordance with the study done by Acharya et al. where Angle's Class I malocclusion was found in 95 (63.33%).¹²

Erum and Mubassar did a study in Pakistani population and found the prevalence of class II malocclusion (70.5%) were higher followed by class I and Class III malocclusion respectively. This could be due to difference in sample size and racial predisposition to certain malocclusions.

In the present study the most frequently observed occlusal attributes in all type of malocclusion was deep bite (206, 73.57%) followed by increased over jet, crowding, and spacing. This result is similar to the study done by Pandey et al.⁸ but in a study done by Sufia et al.¹³ crowding was seen most prevalent.

In this present study distribution of malocclusion and age was significant. This result is similar to study done by Pandey et al.⁸

Conclusion

This study reveals that Angle's class I malocclusion was most prevalent with least common being Angle's class III malocclusion. Deep bite was the most common attributes. Treatment needs was high in 18-40 years of age group. By knowing the occlusal problems, their prevalence and need for appropriate treatment should be improved thus increasing the orthodontic scope in future.

Conflict of Interest: None.

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