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Pattern of malocclusion in patients seeking orthodontic treatment at Dhaka Dental College and Hospital

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ABSTRACT

Aims: To evaluate the pattern and distribution of malocclusion in patients seeking orthodontic treatment in Dhaka Dental College Hospital.

Material and Methods: Total of 400 patients were included in the study with a mean age of 19.10 years. A standard format was prepared to record the data. Ages, sex and Class I, II and III malocclusions were tabulated to cheek for any relationship.

Results: The prevalence of molar class I, II, III and both (I &II) malocclusion were 61.53%, 22.56%, 8.2%, and 7.17%, respectively. The prevalence of incisors class I, class II division 1,classII division 2 and class III malocclusions were 36.92%, 39.74%, 2.56% and 14.87%. out of 400 cases the distribution of various occlusal abnormality were spacing 40%, crowding 46.92%, cross bite 23.07%, open bite 8.46%, impaction 6.41%, rotation 20%, median diastema 13.58%, absent teeth 7.69%, mesiodense 2.51% and cleft lip and palate was 1.28%. Most prevalence age group seeking orthodontics treatment was 16 to 20 years with female to male ratio 2.45 :1.

Conclusion: class I malocclusion was the most prevalent followed by class II malocclusion and class III malocclusion showed least prevalence.

Key Words: **Pattern of malocclusion, orthodontic treatment, prevalence** (Bangladesh Journal of Orthodontics and Dentofacial Orthopedics, April 2013; Vol-3, No. 2, p 9-11)

INTRODUCTION

Occlusion is the relationship among all the components of masticatory system in their function, parafunction and dysfunction, whereas occlusion which is aesthetically and functionally not acceptable is referred to as malocclusion. Numerous features can describe the position and occlusion of teeth , but it has always been difficult to make reliable assessments of dentofacial characteristics, the main difficulties being the definition of criteria and standardization of examiners.[1] Nevertheless, breaking tooth position, down into to discrete characteristics like crowding, spacing, molar relationship, individual tooth malposition and indices can help to solve this problem.[2] The demand for orthodontics treatment is increasing in most countries.[1] Therefore, the epidemiological data on the prevalence of malocclusion is essential in assessing the resources required for orthodontic services and can also provide valuable information regarding the etiology of malocclusion.[2]

Dental malocclusion is present in all societies but its prevalence varies. There have been several studies investigating the prevalence of various dentofacial characteristics[3,4] but only a few have been conducted on an orthodontic population.[5] These significant variations are difficult to explain. It may depend on differences in registation methods, ethnic origin, social class, or age of the examined subjects.[6] Identifying occlusal problem, their incidence and the need of treatment can help to determine the appropriate manpower needed in orthodontics.[7]

The aim of this study was, therefore, to determine the prevalence of individual traits of malocclusion, including sagittal molar relationship, overbite, overjet , crowding and spacing 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

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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, Dhaka Dental College and Hospital, from June 2012 to July 2013. Pre-treatment orthodontic records of 400 patients (142 were males and 258 were females) fulfilling the selection criteria were obtained and used for the study. The inclusion criteria for the sample included those with complete pre treatment records and undergoing orthodontic treatment. Previously orthodontic treatment were not included in this study. Data collection was based on written case records and dental casts. A analysis with Angles classification was used to describe the anterior-posterior relationship of the maxillary and mandibular first molars during maximum intercuspation. The incisor classification was described on the basis of British Standard Classification of Incisor relationship. Localized tooth problem like missing teeth, midline diastema, crowding, spacing, increased overjet, increased over bite, anterior open bite, anterior cross bite and cleft lip and palate were also studied and recorded.

RESULTS

Out of 400 patients, 142 were males and 258 were females. Male – female ratio was 0.55 :1.The mean age of the patients were 19.10 years.

Table I : Distribution of the Sample according to Gender

Gender	Frequency	Percentage
Males	142	35.5%
Females	258	64.5%
Total	400	100%

Table-I shows most of the participants are female

Table II : Distribution of the Sample according to Age

Age range	Male(n& %)	Female(n& %)	Total	Percentage
5-10	8(50%)	8(50%)	16	4.10%
11-15	31(34.06%)	60(65.93%)	91	23.33%
16-20	37(28.90%)	91(71.09%)	128	32.82%
21-25	45(37.5%)	75(62.5%)	120	30.76%
26-	17(51.51%)	16(48.48%)	33	8.46%

Ages of the patients ranged from 6 years to 40 years with mean age 19.10 years and standard deviation((±5.38). The age range was categorized as 5-10 years, 11-15 years, 16-20 years, 21-25 years and over 26 years to evaluate the age range having maximum interest for the treatment

Table III : Distribution of the malocclusion according to Angle's canine and incisor classification is presented in table.

Relation	Frequency	Percentage
Angle's classification (Total 388)		
Class I	240	61.85%
Class II	116	29.90%
Class III	32	8.25%
Canine classification (Total 400)		
Class I	206	52.82%
Class II	121	31.05%
Class III	30	7.69%
Other	43	11.02%
Incisor classification (Total 367)		
Class I	144	36.92%
Class II div 1	155	39.74%
Class II div-2	10	2.56%
Class III	58	14.87%

Table-III shows according to angle's classifications most of the participants are class-I, canine relation class-I but incisor relation Class II div 1

Table IV: Cross tabulation of over jet and over bite.

Range of value.	N & % of N	Male(n & n%)	Female(n & n%)
Over jet			
Normal (1-3 mm)	134(34.35%)	47(35.14%)	87(64.92%)
Increased (>3mm)	202(51.79%)	71(35.14%)	131(64.85%)
Edge to edge (0 to < 1mm)	12(3.07%)	4(33.33%)	8(66.66%)
Negative	26(6.67%)	11(42.3%)	15(57.19%)
Over bite			
Normal (0-3 mm)	217(55.64%)	73(33.64%)	144(66.35%)
Increased (>3mm)	129(33.07%)	54(41.86%)	75(58.13)
Open bite	33(8.46%)	12(36.36%)	21(63.63%)

Table-IV shows over bite and over jet normal and more in female patients

Table-V: Nature of distribution of various occlusal traits

Occlusal traits	Male (n and %)	Female (n and %)	Total (n and %)
Spacing.	50(32.05%)	106(67.94%)	156(40%)
Crowding.	77(42.07%)	106(57.92%)	183(46.92%)
Cross bite.	40(44.44%)	50(55.55%)	90(23.07%)
Open bite.	12(36.36%)	21(63.63%)	33(8.46%0
Median diastema.	20(37.73%)	33(62.26%)	53(13.58%)
Impaction.	8(32%)	17(68%)	25(6.41%)
Midline shifted.	31(39,74%)	47(60.25%)	78(20%)
Rotation.	29(37.17%)	49(62.82%)	78(20%)
Cleft palate.	2(40%)	3(60%)	5(1.28%)

Out of 400 cases studied for various occlusal traits the nature of distribution of various occlusal finding were open bite 8.46%, cross bite-23.07%, impaction 6.41%, median diastema 13.58%, midline shifted 20.51%, spacing 40%, crowding 46.92% , mesiodense 2.51% and cleft palate patient 1.28%.

DISCUSSION

The prevalence of malocclusion had been found to vary with the different population, race, and origin. This type of study might help in planning an orthodontic patient service based upon the need and the pattern of distribution of the malocclusion in Bangladeshi population.

Sharma J N[8] studied 350 patients referred to department of orthodontics, BPKIHS Nepal and found 62.28 % class I malocclusion, 29.4 % class II malocclusion and 8.2% class III malocclusion. When compared to the present study the prevalence of class I and class II malocclusion was slightly higher but similar pattern of class III malocclusion.

Sari [9] evaluated 1602 patients in the department of orthodontics, Selcuk university, Turkey and showed that 61.7 % patients had class I malocclusion, 25.1% had class II division 1 malocclusion, 3.15 % had class II division 2 malocclusion and 10.2% had class III malocclusion. The frequency of class I malocclusion was higher than that of the present study but class II div 1 and class III malocclusion were less than that of the present study.

Study of individual occlusal traits showed that there was frequent occurrence of crowding, cross bite, median diastoma, rotation. The prevalence of crowding (46.92 %) predominantly in the lower anterior segment and upper lateral segment. The cross bite was 23.07%, the open bite were 8.46%, median diastema was 13.58% and rotation was 20%. The frequency of occlusal traits were greater in female than male patients. There were 1.28% case of cleft lip and palate in the sample under orthodontic treatment noted.

Age range of 15-20 years showed the highest frequency of malocclusion than other groups, among which females (64.5%) seeking orthodontics treatment were near about twice than males (35.5%). This could be related to the increased self consciousness for esthetics in younger age group. Increased response of females when compared to the males due to higher esthetic concern of girls than boys and also due to social or matrimonial reasons.

CONCLUSION

- Most common malocclusion was class I followed by class II and class III.
- Age group 15-20 years highest frequency with females twice more than males.
- A nation wide survey with well distributed sample size is recommended for planning orthodontic services for the people of Bangladesh.

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