Original Article

An Overview of Orthodontic Patients Visiting in a Tertiary Care Hospital in Northern Region of Bangladesh

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Abstract

Background: *Malocclusion is still not considered as a dental problem because of more emphasis is given to the treatment of dental caries and periodontal diseases due to pain complained by patients.* ***Objective:*** *The study was conducted to find out the pattern of diseases of orthodontic patients visiting in a regional tertiary care hospital in northern area of Bangladesh.* ***Materials and Methods:*** *This snap-shot study was conducted on randomly selected 84 patients attended in the Department of Orthodontics & Dentofacial Orthopaedics, Dental unit Thengamara Mohila Sabuj Sangha (TMSS) Medical College and Hospital, Bogura from July 2016 to June 2017. All data were collected from patients' history and clinical examination of the patients. Descriptive statistics were calculated using MS Excel from the collected data.* ***Results:*** *One third of the patients (33.33%) have normal over bite. Class I and Class II molar relationship are distributed as 44% and 53.5% respectively. Class I and Class II division 1 Incisor relationship is distributed as near about same, 44% and 34.52% respectively; and 14.29% have Class II division 2. Class I and Class II Canine relationship are distributed as near about same, 44% and 48.80% respectively. Forty four percent patients have normal over jet, 34.52% patients have increased over jet, and 7.20% patients have reversed over jet.* ***Conclusion:*** *The epidemiological data on the prevalence of malocclusion is an important determinant in planning appropriate levels of orthodontic services in the Bangladeshi population and further studies are required to provide accurate estimates of the orthodontic treatment.*

Key words: Maloclusion, Orthodontic Problem, Tertiary care Hospital, Northern region of Bangladesh, Soft tissue pattern, Anterior Posterior arch relationship

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Introduction

Bangladesh being a developing country, there are still remote areas unaware of the advances in various fields of dentistry such as orthodontics is one of them. Dental Caries, gingival disease, dental fluorosis, oral ulcers and malocclusion are the most common dental problem in our country now days.[1] However, malocclusion is still not considered as a dental problem because of more concern is given to the treatment of dental caries and periodontal diseases due to pain complained by patients. A malocclusion can be defined as an irregularity of the teeth or a mal relationship of the dental arches beyond the range of what is accepted as normal.[2]

Orthodontic treatment need can be defined as the degree to which a person needs orthodontic treatment because of certain features of his or her malocclusion, the functional, dental health or aesthetic impairment and the negative psychological and social repercussions to which it gives rise. The purpose of orthodontic treatment is to create a healthy and functional bite, which is the part of tooth alignment and part jaw positions.

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When jaws and teeth line up correctly, they are able to function as nature intended. This promotes oral health, general physical & mental health.

In various study, variety of malocclusion and oral abnormalities have been found such as soft tissue morphology (Lip & Tongue), oral hygiene, periodontal condition, caries, missed teeth, over bite, cross bite, over jet and other facial asymmetry. Malocclusion should be public health concerns due to its high prevalence rate.[3,4] According to World Health Organisation (WHO), malocclusion is the third highest oral health priority.[5]

There is exiguity of data about the importance of orthodontic treatment among the population of the northern area of Bangladesh. This data could be used as resources for planning of orthodontic treatment in remote areas. Hence, the study was conducted to find out the severity of orthodontic patients visiting in a regional tertiary care hospital in the northern area of Bangladesh.

Materials and methods

This snap-shot study was conducted on purposively selected 84 patients attended in Department of Orthodontics & Dentofacial Orthopaedics, TMSS Medical College Dental Unit over a period of one year from July 2016 to June 2017. Those patients undergoing or completed orthodontic treatment, craniofacial deformities or syndrome, missing of or extensive carious lesion in permanent first molar, incisor or canine teeth were excluded from the study. All data were collected from patients' history and clinical examination of the patients. Patients' demography, soft tissue pattern, intra-oral general findings, vertical arch relationship, antero-posterior arch relationship, lateral arch relationship and teeth alignment were recorded. A qualitative analysis with Angle's[6] classification was used to describe the antero-posterior relationship of the maxillary and mandibular first molars during maximum intercuspation. The incisor classification was described on the basis of British Standard Classification[7] of Incisor relationship. The Canine classification was described according to Fernandes et. al.[8] Other variables examined in this study were overjet, overbite, crowding, crossbite, spacing and median diastema as described by Rita et. al.[9], Rubby et. al.[10] and Mohanty et. al.[11] Descriptive statistics were calculated using MS Excel from collected data.

Results

Age of the study patients ranged from 9 years to 38 years; mean±sd 20.74±4.89 (fig. I). Most of the patients (70.24%) were female and rest are male (fig. 2). Majority of the patients (57.14%) were from rich families, and only 8.33% patients were from poor families (fig. 3).

Table I shows that most of the patients (75%) has competent lip, 72.6% patients lip were habitually together, almost all of the patients' tongue position, size and behavior were normal (table I). Table II shows maximum number of patient's (64.30%) have good oral hygiene; about one third of patients' oral hygiene is average, and others' oral hygiene is poor. Periodontal condition is good in more than half of the patients (58.30%), average in about one third of the patients (34.50%).

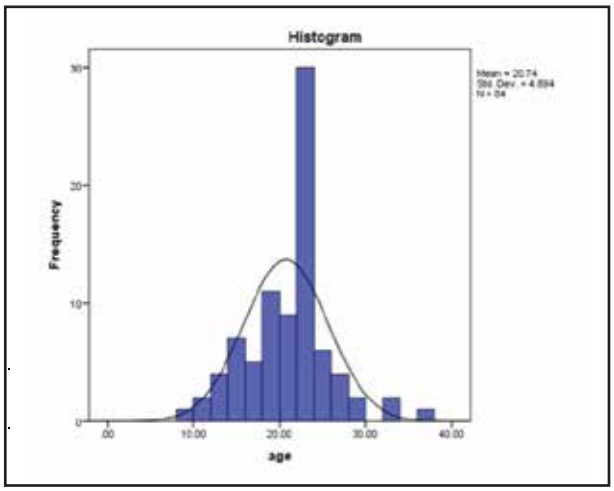

Fig 1: Age distribution of patients

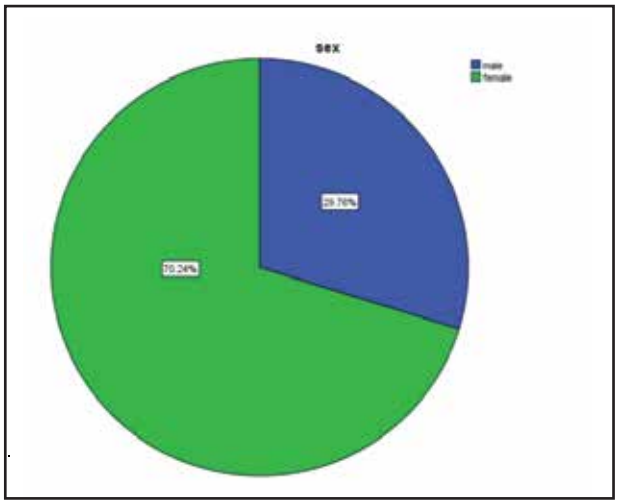

Fig 2: Sex distribution of patients

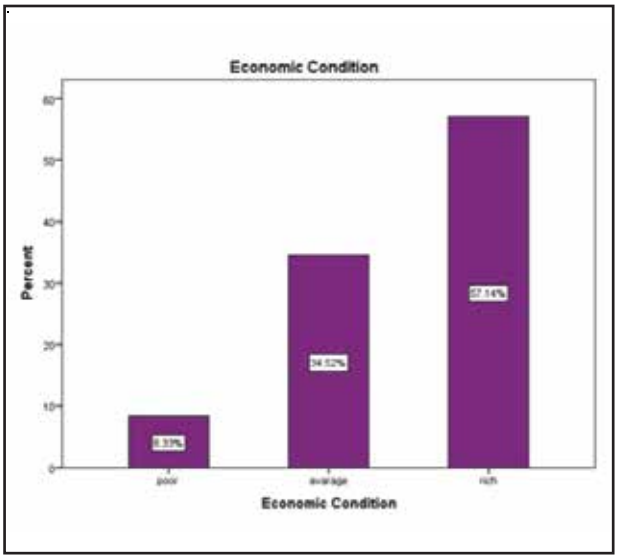

Fig 3: Economic condition of patients

Table I: Distribution of soft tissue pattern of patients (n = 84)

Characteristics		n	%
Lip morphology	Competent	63	75.0
	Incompetent	12	14.3
	Potentially Competent	9	10.7
	Total	84	100.0
Lip habit	Habitually Apart	23	27.4
	Habitually To gether	61	72.6
	Total	84	100.0
Tongue position	Normal	82	97.6
	Abnormal	2	2.4
	Total	84	100.0
Tongue size	Normal	79	94.0
	Macroglossia	4	4.8
	Microglossia	1	1.2
	Total	84	100.0
Tongue behavior	Normal	82	97.6
	Abnormal	2	2.4
	Total	84	100.0

Table II: Distribution of intra oral general findings of patients (n = 84)

Characteristics		n	%
Oral hygiene	Good	54	64.3
	Average	25	29.8
	Poor	5	6.0
	Total	84	100.0
PDL Condition	Good	49	58.3
	Average	29	34.5
	Poor	6	7.1
	Total	84	100.0
Caries	No caries	70	83.3
	Caries in maltiple tooth	3	3.6
	Caries in single tooth	11	13.1
	Total	84	100.0
Missed Tooth	Single Missing	13	15.5
	No Missing	71	84.5
	Multiple Missing		
	Total	84	100.0
Extra Tooth	Single	5	6.0
	No	79	94.0
	Multiple		
	Total	84	100.0

Most of the patients (83.30%) have no any caries. Only 15% patients have a single missing tooth; others have no missing tooth. Six percent patients have extra tooth.

Table III: Distribution of vertical arch relation of patients (n = 84)

Characteristics		n	%
Over Bite	Bilaterial scissor bite	5	6.0
	Deep bite	23	27.4
	Normal	28	33.33
	Unilateral scissor bite	8	9.5
	Edge to edge bite	8	9.5
	Total	72	85.71
Open Bite	Absent	72	85.71
	Present	12	14.29
	Total	84	100.0

Table III shows that one third of the patients (33.33%) have normal over bite, 27.40% patients have deep bite, and 14.29% patients have open bite. Table IV shows Class I and Class II molar relationship is distributed as near about same, 44% and 53.5% respectively; and only 2.40% patients have class III molar relationship. Class I and Class II division 1 Incisor relationship is distributed as near about same, 44% and 34.52% respectively; and 14.29% have Class II division 2 and 7.20% patients have class III Incisor relationship. Class I and Class II Canine relationship is distributed as near about same, 44% and 48.80% respectively; and 7.20% patients have class III Incisor relationship. Forty four percent patients have normal over jet, 34.52% patients have increased over jet, 14.29% patients have decreased over jet, and 7.20% patients have reversed over jet (Table IV)

Table IV: Distribution of anterior-posterior arch relationship of patients (n = 84)

Characteristics		n	%
Molar relationship	Class I	37	44.0
	Class II	45	53.5
	Class III	2	2.4
	Total	84	100.0
Canine relationship	Class I	37	44.0
	Class II	41	48.8
	Class III	6	7.2
	Total	84	100.0
Incisor relationship	Class I	37	44.0
	Class II Div 1	29	34.52
	Class II Div 2	12	14.29
	Class III	6	7.2
	Total	84	100.0
Over Jet	Normal	37	44.0
	Increased	29	34.52
	Decreased	12	14.29
	Reversed	6	7.2
	Total	84	100.0

Table V: Distribution of lateral relationship of patients

(n = 84)

Characteristics		n	%
Midline	Shifted	8	9.5
	Coincide	72	90.5
	Total	84	100.0
Facial Symmet	Asymmetry	9	10.71
	Symmetry	75	89.29
	Total	84	100.0
Cross Bite	Absent	45	44.0
	Anterior	27	32.1
	Unilateral posterior	12	14.29
	Total	84	100.0

Table V shows that about 90% patients have neither shifted midline nor facial asymmetry. About half of patients (44%) have no cross bite, and 32.10% patients have anterior cross bite. Table VI shows about half of patients (46.4%) have neither crowding nor spacing in either of arch.

Table VI: Distribution of teeth alignment of patients

(n=84)

Characteristics		n	%
Upper Arch	Normal	39	46.4
	Crowding	37	44.0
	Spacing	8	9.5
	Total	84	100.0
Lower Arch	Normal	39	46.4
	Crowding	30	44.0
	Spacing	13	7.1
	Total	84	100.0

Discussion

Albeit the malocclusion isn't thought as a dangerous condition (2), the greater part of the concentration in late years was laid upon the improvement of orofacial messes and the treatment of coming about malocclusions also, the looking for orthodontic treatment is expanding in many nations to upgrade the facial excellence and improve the facial appearance. Epidemiological information on the predominance of malocclusion are significant determinant in arranging the proper degrees of orthodontic treatment. Along these lines, numerous examinations included researching the commonness of malocclusion in different populaces.

The study patients' age ranged from 9 years to 38 years; mean±sd 20.74±4.89 (fig. I). Age of patients consisted with study of Rita et. al.[10], Rubby et al.,[11] and Rahman et. al.;[13] and slightly differ with Samira and Zakir[14] who found patients age mean±sd 13.0±1.4; as they selected the subjects from school children. Most of the patients (70.24%) were female and rest are male (fig. 2) that correlates consisted with study of Rita et. al.[10], Rubby et. al.,[11] and Rahman et. al.;[13]. Majority of the patients (57.14%) were from rich families, and only 8.33% patients were from poor families (fig. 3). Orthodontic problem is mainly an aesthetic concern. With the advancing of age, the people are more aware about their aesthetics, and female are commonly more careful their aesthetics. In context of Bangladesh, orthodontic treatment is hardly affordable by patients that are why rich people report to hospital seeking orthodontic treatment. Same picture is found in both center and periphery of Bangladesh.

This study found most of the patients (75%) has competent lip, 61% patients lip were habitually together, almost all of the patients' tongue position, size and behavior were normal (table I). Periodontal condition is good in more than half of the patients (58.30%), average in about one third of the patients (34.50%). These study findings are supported by Kolawole et al.[15] and Yadav et al.[16] who found similar result in a study in Nigeria and Nepal respectively. Maximum no of patients' (64.30%) have good oral hygiene; about one third of patients' oral hygiene is average, and others' oral hygiene is poor.

In contemporary dental care, an increasing number of adult patients are seeking orthodontic treatment. Oral hygiene is greatly complicated following the placement of fixed orthodontic appliances. Consequently, patients with fixed orthodontic appliances are at an increased risk to develop dental caries and gingivitis. So, oral hygiene practices are greatly important for successful orthodontic treatment.[17] Most of the patients (83.30%) have no caries. Only 15% patients have a single missing tooth; others have no missing tooth. Six percent patients have extra tooth (table II). Similar results were reported by Gupta and Singh[18] in Jammu & Kashmir, India.

One third of the patients (33.33%) have normal over bite, 27.40% patients have deep bite, and 14.29% patients have open bite (table III). Forty four percent patients have normal over jet, 34.52% patients have increased over jet, 14.29% patients have decreased over jet, and 7.20% patients have reversed over jet (table IV). About half of patients (44%) have no cross bite, and 32.10% patients have anterior cross bite (table V). About half of patients (46.4%) have neither crowding nor spacing in either arch (table VI). These findings are comparable with Rita et. al.[10] who reported, increased overjet was found in 35.34% of the patients; deep overbite was found in 40.3% of the subjects; crossbite was found in 24.3% of the patients. In 58.2% of the subjects, crowding was present. In 38.5% of the patients, spacing was seen. The data of high prevalence of increased overjet and overbite, in the present study, was in agreement with the data reported by Proffit et. al.[19] In the present study, scissor bite was less frequently observed than crossbite and observed in only 0.5% of the subjects examined. This low rate of scissor bite was very close to the data reported by Gelgor et. al.[20] Crowding in the upper and lower dental arches was the most frequent of all anomalies recorded with ranges of 70.0% and 47.4%, respectively. This finding complied with the results of Gelgor et. al.[20] and Thilander et al.[21] who reported that crowding was the most frequent of all anomalies. The prevalence of spacing in this study for upper dental arch (6.4%) and lower dental arch (12.5%) was considerably less than the data

reported by Thilander et. al. [21] Because the studies published in different regions of Turkey did not evaluate both posterior and anterior segment, we could not compare the results with that of studies.

In the present study, class II malocclusion was found to be the most prevalent occlusal pattern and constituted the major proportion of malocclusion, which is in agreement with study of Nainan et. al.[22] Others contemporary literature existing in Bangladesh context publishes similar data from hospital setup.[10,11,13] However, in Asian context, literature has reported Class II malocclusion also as more frequent than Class I and III malocclusion in Asians.[23] By knowing the occlusal problems, their prevalence and need for appropriate treatment, helps us to plan the treatment necessary thus increasing the scope of orthodontics in future. This also provides the baseline data for planning the orthodontic treatment. Nationwide Survey including various ethnic groups of Bangladesh is necessary for proper planning of orthodontic treatment.

Conclusion

The prevalence of malocclusion is high, a reason to continue training professionals to care for those patients in need of treatment. The epidemiological data on the prevalence of malocclusion is an important determinant in planning appropriate levels of orthodontic services and further studies are required to provide accurate estimates of the orthodontic treatment need in Bangladeshi population. Identifying occlusal problems, their incidence and the need for treatment can help to determine the appropriate treatment plan and manpower needed in orthodontics. Further studies are required to provide accurate estimates of the orthodontic treatment need in Bangladeshi population.

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