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Research Article

**DISTRIBUTION OF MALOCCLUSION FEATURES AMONG
ORTHODONTIC PATIENTS ATTENDING THE PUNJAB
DENTAL HOSPITAL, LAHORE****Dr. Anum Rashid¹, Dr. Tayybah Tahira², Dr. Sobia Rehman³, Dr. Mohsin Majeed⁴**¹Lahore Medical & Dental College, Lahore^{2,3,4}Nishtar Institute of Dentistry, Multan**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:****Objectives:** To determine the pattern of the distribution of malocclusion in a sample of orthodontic patients in Lahore.**Materials and Methods:** The sample consisted of 200 study models of patients aged 8-36 who visited the Orthodontics department of Punjab dental Hospital, Lahore for one-year duration from July 2019 to July 2020 for orthodontic treatment. The total sample size was divided into male and female groups, the age was divided into 3 groups: 8-11 years old, 12-17 years old and 18-36 years old. All data was recorded and analyzed using SPSS version 22.**Result:** Out of all 200 tested castings; The Angle classification of malocclusions was as follows: class I malocclusion in 101 (50.5%), class II malocclusion in 90 (45%) samples and class III malocclusion in 9 (4.5%) samples.**Conclusion:** Angle's Grade I malocclusion was the most common malocclusion among orthodontic patients visiting Punjab Dental Hospital, Lahore.**Key words:** angle class I, angle class II, angle class III, malocclusion, frequency**Corresponding author:****Dr. Anum Rashid,**

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INTRODUCTION:

Crowded, irregular, and protruding teeth have been a problem for some people since antiquity, and attempts to correct the disorder date back to at least 1000 BC¹. Angle's classification of malocclusion in the 1890s was an important step in the development of orthodontics as it not only divided the main types of malocclusion but also provided the first clear and simple definition of a normal malocclusion in natural dentition. According to Angle, if the teeth were arranged on smoothly curved occlusal lines and there was a class I molar relationship, this would be due to a normal bite. Angle's classification has four classes, ie Normal occlusion, Class I malocclusion, Class II malocclusion, and Class III malocclusion²⁻³. Differences in the characteristics of malocclusion or the variability of teeth and facial features in different populations would be expected due to differences in racial and ethnic makeup. Information on the most common varieties of a dentofacial feature can be obtained by examining how widespread the feature is, ie, prevalence, and how often it is found, ie, prevalence⁴. It presents an important perspective for the practicing orthodontist. Epidemiological data is also necessary to evaluate the resources needed to provide orthodontic services and can provide valuable information on the etiology of malocclusion⁵. Various epidemiological studies have been carried out around the world to assess the incidence of malocclusion and describe occlusal features. Data from the National Health and Nutrition Examination Survey (NHANES-III) give a clear picture of malocclusion in the US population in the 1990s. In this context, very few studies have been conducted to assess the pattern of malocclusion distribution in the population. The aim of the study was to determine the pattern of the distribution of malocclusion in an orthodontic patient.

MATERIALS AND METHODS:

The sample consisted of 200 study models of patients aged 8-36 who visited the Orthodontics department of Punjab dental Hospital, Lahore for one-year duration from July 2019 to July 2020 for orthodontic treatment.

The study was conducted by assessing the research model of the patients. The study included samples with complete dentition of permanent teeth, except for the third molars. The study excluded dentition with the absence of molars, any history of jaw injury, the presence of masticatory disharmony and diseases of the temporomandibular joint. The study design was tested to classify it as Class I, Class II and Class III malocclusion according to the Angle classification system. Classification was done using Angle's molars on each patient's study models to describe an anterior-posterior malocclusion and the data was recorded on a data collection sheet. All data was analyzed using SPSS version 22.

RESULTS:

Of the 200 scales tested, 74 were male and 126 were female. The male to female ratio was 0.58: 1 (Table 1). The age range in the study was 8-36 years old, mean 18.74 years. The age groups are divided into 3 groups: 8-11 years old, 12-17 years old and 18-36 years old. Among them, the most frequent group of patients for orthodontic treatment was 18-36 (61.5%), and at least 8-11 (3%) (Table 2). The Angle classification of malocclusions showed that; Class I malocclusion was the most frequent in sample 101 (50.5%), followed by class II malocclusion in 90 (45%) and class III malocclusion in 9 (4.5%) (Table 3). Depending on gender, all forms of malocclusion were more frequent in women (Table 4). Among age groups; in the 8–11 and 12–17 years old age group, class II malocclusion was the most common, while in the 18–36 age group, class I malocclusion was the most common (Table 5). To test the relationship between the distribution of malocclusion and gender; Pearson chi-square value was calculated. With α set to 0.05 and df set to 2, p-value was 0.62 ($p < 0.05$); therefore, the relationship was not significant (Table 4). However, the relationship between the distribution of malocclusion and age was statistically significant ($p = 0.023$) (Table 5).

Table 1: Gender distribution of the subjects

Gender	Frequency	Percentage (%)
Male	74	37
Female	126	63
Total	200	100

Table 2: Age distribution of the subjects

Age range	Frequency	Percentage (%)
8-11	6	3
12-17	71	35.5
18-36	123	61.5
Total	200	100

Table 3: Distribution of malocclusion according to Angle's classification

Angle's Classification	Frequency	Percentage (%)
Class I	101	50.5
Class II	90	45
Class III	9	4.5
Total	200	100

Table 4: Association of malocclusion with gender

Angle's Classification	Male	Female	X ² Value	p-Value
Class I	33 (32.67%)	68(67.32%)	5.53	0.62 (NS)
Class II	40 (44.44%)	50(55.55%)		
Class III	1(11.11%)	8(88.88 %)		
Total	74	126		

Table 5: Association of malocclusion with age group

Age group	Class I	Class II	Class III	X ² Value	p-Value
8-11 yrs	1 (16.66%)	4 (66.66%)	1 (16.66%)	11.27	0.023*
12-17 yrs	30(42.25%)	35(49.29%)	6(8.45%)		
18-36 yrs	70(56.91%)	51(41.46%)	2(1.62%)		
Total	101	90	9		

DISCUSSION:

It has been found that the incidence of malocclusion varies with population, racial and ethnic origin. This type of examination is especially helpful in identifying and planning the type of orthodontic services that can be provided based on the distribution of malocclusion in the population⁷⁻⁹. The present study found 50.5% of class I malocclusions in angles, 45% of class II malocclusions, and 4.5% of class III malocclusions. The pattern of malocclusion in this study is similar to that of Sharma, which found 62.28% Class I malocclusions, 29.4% Class II malformations, and 8.2% Class III malformations; however, the incidence of class II malocclusion is higher in our study. A similar pattern of malocclusion distribution was reported by the National Health and Nutrition Examination Survey (NHANES). NHANES data suggest that the highest number is class I malocclusion (50% -55%), the next highest group is class II (15%), the smallest group is class III (less than 1%) and the rest of the population had normal occlusion (30 %).

The incidence of class II malocclusion was higher in our study compared to the NHANES report¹⁰⁻¹². As our study only used the cast of the patient reporting for orthodontic treatment, none of them had a correct occlusion. According to a study by Shresth BK among 937 children in various schools in the Kathmandu Valley; correct occlusion was present in 27%, class I malocclusion in 59%, then class II in 25% and class III in 16%. In another study by Piya et al. Among patients reporting for orthodontic treatment, class I malocclusion was found in 59.5%, then in class II - 26.7%, and class III in 13.7%. The pattern of malocclusion in the present study is similar to that of Piy et al, except for class III malocclusion which was higher later¹³⁻¹⁴. This may be due to ethnic diversity due to the larger Mongoloid population in the Kathmandu Valley compared to 's Terai region. Another similar study was conducted by Shrestha S and Shrestha RM in which models of 464 orthodontic patients (165 males and 299 females) aged 11 to 30 years were tested to assess malocclusion using Angle's

classification. The malocclusion status among ese presenting for orthodontic treatment was 54.7% class I, 36.9% class II and 8.4% class III. Compared to this study, the present study showed a similar distribution with a Class I angle malocclusion. Nainan found Class I malocclusion in 49.9%; which was the most common in comparison with other types of malocclusion¹⁵. The result is similar to the malocclusion pattern and distribution compared to the present study.

CONCLUSION:

Based on the treatment history of patients presenting for orthodontic treatment; the malocclusion status in the sample:

1. The incidence of Angle class I, II and III malocclusions was 50.5%, 45% and 4.5%, respectively, with class I malocclusion being the most common.
2. The majority of patients admitting to orthodontic treatment were women (63%).
3. The majority of patients presenting for orthodontic treatment are aged 18-35 (61.5%).

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