

Characteristics of Malocclusion in Iraqi Orthodontic Patients Anteroposterior Dental Arch Relationship

Bashaer B. Nouri^a and Iman I. Al-Sheakli^a

Abstract: The aim of the study was to determine variability of anteroposterior dental arch relationship in orthodontic patients and type of treatment used. A group of pretreated orthodontic patients were examined clinically for the classification of malocclusion (the anteroposterior relationship) according to Angles classification and type of treatment needed in a group of 1550 patient. The results showed that there was no significant differences in anteroposterior relationship according to gender and there was a decrease in rate of class I, and an increase in class II both divisions and thus an increase in the severity of malocclusion during the last decade and a need for more complicated orthodontic procedures.

Keywords: Anteroposterior, Iraqi, orthodontic patients (Iraqi Orthod J 2005; 1(2): 18-21).

The prevalence of malocclusion among various population groups has been of major interest to orthodontists for its importance in planning orthodontic treatment, and certain epidemiological studies have been conducted in an attempt to register the severity of malocclusion and the significance of various occlusal features including anteroposterior relationship.¹⁻⁵ Other epidemiological studies have been conducted to evaluate the severity of malocclusion using treatment need indices.^{6,7}

Moreover, comparative studies⁸ studied specific occlusal anomalies between two groups of Tanzanian and Finnish schoolchildren. In Iraq a study on the nature of malocclusion features was conducted by Kinnan,⁹ and another epidemiological study was carried out on school children, assessing various occlusal features as anteroposterior relationship, and other occlusal anomalies by Al-Huwaizi et al.¹⁰

Anteroposterior dental arch relationship was described by many researchers, but the first to describe it was Angles¹¹ who classified it into class I, class II (division 1 and 2), and class III; others described it as normal, mesial and distal occlusion.^{2,12,13} The aims of this study are to determine the variations of anteroposterior relationship among a group of pretreated orthodontic patients and the type of treatment accomplished and compare the results with a similar previous study done in Iraq.

MATERIALS AND METHODS

The sample examined represented a group of 1550 pretreatment orthodontic patients who attended the orthodontic department in the Collage of Dentistry, among which 64 percent were females and 36 percent were males. The age range varied from 1 to more than 30 years and were divided into seven age groups, the distribution of the sample according to gender and age are shown in table 1.

^a B.D.S., M.Sc.; Lecturer at the Department of Orthodontics, College of Dentistry, University of Baghdad.

Data were obtained from direct intraoral examination of the patients, complete records were registered. Anteroposterior dental arch relationship was recorded according to Angles¹¹ depending on the relation of first molars, by direct clinical examination and when the first molar was lacking the anteroposterior relationship was defined according to Barrow et al.¹⁴ Discrepancies less than half cusp were not noted. Then the orthodontic patients were classified according to the type of orthodontic treatment into:

1. treatment with removable appliances.
2. treatment with fixed appliances.
3. Others (extraction only, functional appliances, or habit breakers).

Chi square test was used to compare the anteroposterior relationship variations according to gender. Chi square-test was also used to compare the total results of the present study with a previous Iraqi study.⁹

RESULTS

The classification of anteroposterior relationship showed no significant differences in regard of gender as shown in figure 1. Class II malocclusion (division 1 and 2) were low at stages of deciduous dentition but they tend to increase at stages of mixed and permanent dentition. The same was noticed regarding class III malocclusion (Table 2).

The type of treatment used did not show significant differences according to gender as shown in figure 2. However, the type of treatment depend on age; it was evident that removable appliances were used in a high rate (53.2%) at stages of mixed dentition (Table 3), while fixed appliances were used at high rates (65.6%) at stages of permanent dentition. Functional appliances were used mostly during stages of deciduous dentition and early mixed dentition (Table 3).

The comparative statistical results (Table 4) showed that the rate of class I anteroposterior relationship was significantly low (43%) at the present study compared to Kinaan (65%). Class II₁ anteroposterior relationship

was non-significantly higher in the current study (35.5%) compared to Kinaan (20%). Class II₂ was significantly higher (7.9%) compared to the previous Iraqi study 1%, while the rate of class III malocclusion remained the same.

Regarding the type of orthodontic treatment used there was a significant decrease in the rate of using removable appliances (37.2%), compared to Kinaan's study (48%), and other types of treatment as habit breakers and functional appliance in the current study were also low (18.8%) compared to Kinaan (28%), while the use of fixed appliances was significantly higher at the present study (44.1%) compared to the previous study (24%).

DISCUSSION

The classification of anteroposterior relationship showed no significant differences in regard of gender and this is in accordance with various epidemiological studies conducted by previous studies^{10,15-17} while other researchers found that class III was significantly more in males,¹⁸ and others found that both class II and III were significantly higher in females.¹⁹

Class II division 1 and 2 increased with age probably due to the effect of oral musculature, class III also increased with age due to the continuous growth of mandible with age in a downward and forward direction from stages of mixed dentition onward were growth is on definite sites.²⁰

The type of treatment needed depended on age as removable appliances and functional appliances were indicated for orthodontic patients at stages of deciduous dentition while fixed appliances were used at stages of late mixed and permanent dentition stages.

The comparative analysis of anomalies of anteroposterior relationship did not coincide with that of Kinnan,⁹ it showed that the rate of class I anteroposterior relationship was significantly low compared to the previous Iraqi study, while class II was significantly higher indicating an aggravation in the severity of malocclusion during the last decade possibly due to neglect and other possible financial reasons and consequently more complicated orthodontic treatment is needed and as it is evident, on comparing the type of orthodontic treatment needed, it did not agree with that of Kinaan.⁹

There was a non-significant increase in the use of fixed appliance, meanwhile the use of removable appliances and other methods was significantly lower indicating an increase in severity of malocclusion and the need for more complicated type of treatment methods. In addition to that interceptive and preventive orthodontic programs are required to enhance early detection of orthodontic problems and minimize the need for complicated orthodontic procedures in permanent dentition stage.

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Table 1: The distribution of the sample according to gender and age.

Age	Females		Males		Total	
	No.	%	No.	%	No.	%
1-5	76	7.65	28	5.04	104	6.71
6-10	131	13.18	94	16.91	225	14.52
11-15	287	28.87	123	22.12	410	26.45
16-20	272	27.36	184	33.09	456	29.42
21-25	128	12.88	79	14.21	207	13.35
26-30	65	6.54	31	5.58	96	6.19
>30	35	3.52	17	3.06	52	3.35
Total	994	100	556	100	1550	100

Table 2: The distribution of patients according to classification of malocclusion and age.

Age	Class I		Class II ₁		Class II ₂		Class III		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1-5	58	55.8	26	25.0	0	0.0	20	19.2	104	100
6-10	76	33.8	91	40.4	13	9.9	45	20.0	225	100
11-15	199	48.5	132	32.2	19	6.6	56	13.7	406	100
16-20	195	42.8	156	34.2	29	10.7	58	12.7	438	100
21-25	96	46.4	74	35.7	9	7.0	24	11.6	203	100
26-30	24	25.0	47	49.0	6	9.2	19	19.8	96	100
>30	19	36.5	22	42.3	3	8.6	7	13.5	51	100
Total	667	43.0	548	35.4	79	7.9	229	14.8	1523	100

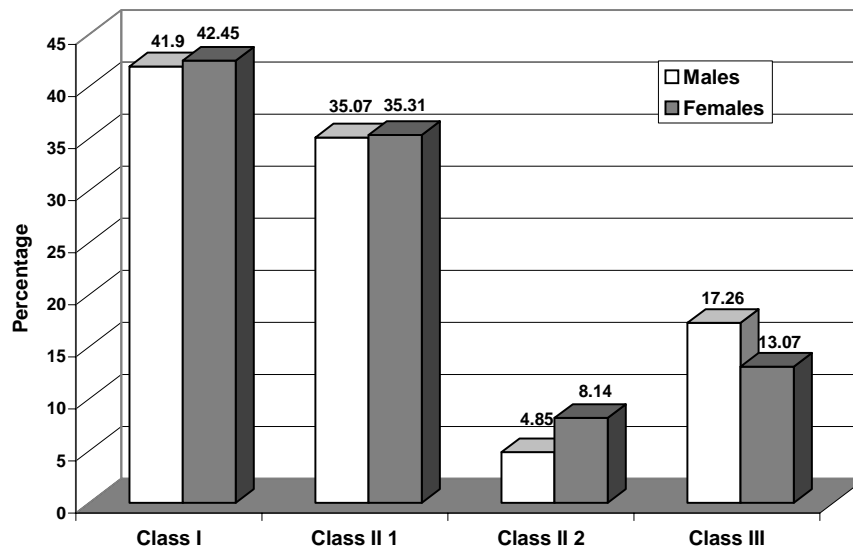


Figure 1: The distribution of patients according to their class of malocclusion and gender.

Table 3: The distribution of treatment according to age.

Age	Removable appliance		Fixed appliance		Chin cap		Habit breaker				Total	
	No.	%	No.	%	No.	%	Fixed		Removable		No.	%
							No.	%	No.	%		
1-5	11	10.6	0	0	18	17.3	29	27.9	46	44.2	104	100
6-10	106	47.1	27	12	13	5.8	28	12.4	51	22.7	225	100
11-15	218	53.2	125	30.5	26	6.3	23	5.6	18	4.4	406	100
16-20	144	31.6	299	65.6	0	0	0	0	13	2.9	438	100
21-25	57	27.5	124	59.5	0	0	0	0	26	12.6	203	100
26-30	29	30.2	67	69.8	0	0	0	0	0	0	96	100
>30	11	21.2	41	78.8	0	0	0	0	0	0	51	100
Total	576	37.2	683	44.1	57	3.7	80	5.2	154	9.9	1523	100

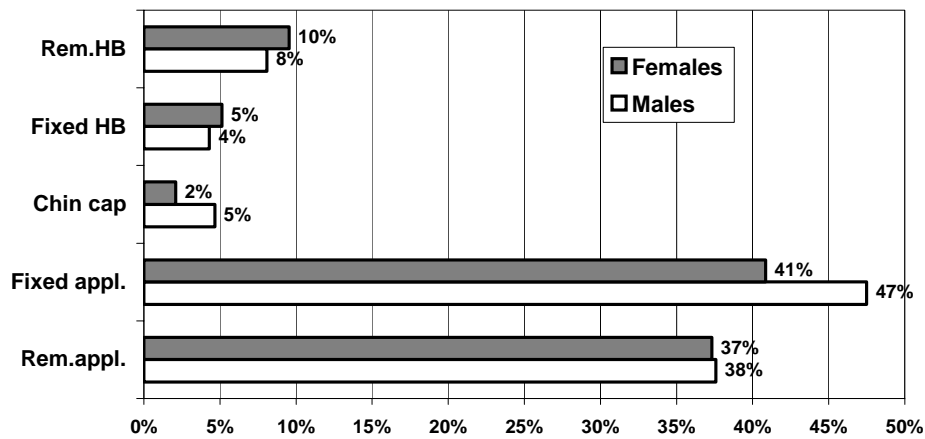


Figure 2: The distribution of treatment according to gender.

Table 4: The comparative statistical results of Kinnan⁹ and the present study.

		Kinaan ⁹	Present study	Chi square	
				X ²	p
Antero-posterior relation	Class I	65	43	6.975	0.008**
	Class II ₁	20	35.4	3.070	0.080
	Class II ₂	1	7.9	39.801	0.000**
	Class III	14	14.8	5.271	0.022*
Treatment	Removable Appliance	48	37.2	3.162	0.075
	Fixed appliance	24	44.1	1.284	0.257
	Others	28	18.8	0.252	0.616

* significant (p<0.05), ** highly significant (p<0.01)