

PREVALENCE OF ANGLES MALOCCLUSION ACCORDING TO AGE GROUPS AND GENDER

¹KASHIF ASLAM, BDS, MSc (Kings College, London)

²RIZWAN NADIM, BDS, MPH (England)

³SAHER RIZWAN, MBBS

ABSTRACT

To assess the prevalence of Angle's Malocclusion in relation to different age groups and gender in general population. A cross sectional study was done at Dow Dental College during period of 2012-2013. Six hundred participants were selected according to inclusion criteria by using a non-randomized purposive sampling technique. Visual observation was done to find whether the participants had class 1, 2 and 3 in relation to self-designed age groups and gender. Data was collected by questionnaire filled by the researcher and was further analysed by using computer software SPSS 16.0. Pearson chi square was applied to observe whether the prevalence of Angles Malocclusion is dependent on different age groups and gender. Class 1 demonstrated to be the most established malocclusion. Females were observed to have more class 1 than males. Conversely Pearson chi square did not reveal any statistical significant result of Angles Malocclusion in relation to different age groups and gender. In this cross-sectional study, the prevalence of malocclusion traits did not change as shown by the p-value being insignificant. Cross-sectional studies of younger population groups are to be used for research into the long-term physiological effects of malocclusion to know if certain and specific malocclusion traits are stable over time.

Key Words: Prevalence, Malocclusion, Angle's Classification, Age groups, Gender.

INTRODUCTION

A systematic and well-organized dental care program for any target population in a community requires some basic information, such as the prevalence of the condition. Epidemiological studies enable us to study not only prevalence of a condition but also its severity. At present, malocclusion is the third most common dental disease after dental caries and periodontal diseases. In fact, with the reduction in dental caries among children and adolescents, malocclusion is receiving more attention.¹ Malocclusion is not a single entity but a group of conditions, classified accordingly. The prevalence of malocclusion has been studied various times in different countries of the world and the results

vary from 11% to 93%.²⁻⁵ Such diversity is difficult to explain, because it may be due to many reasons such as selection criteria of subjects, country of choice, etc.

Occlusion can be defined as the contacts between upper and lower teeth in all mandibular positions and movements.^{6,7} Different classifications have been presented previously, by Angle, of which classification based on first permanent molars relationship is now used. Based on this classification, occlusion is divided into three categories: Class I is the normal relationship between upper and lower first permanent molars. In this class the lower first permanent molar is about 1/4 tooth width anterior to the same upper tooth. In class II, the lower first permanent molar and other lower teeth have a more posterior position and in class III, the lower first permanent molar and other lower teeth have a more anterior position.^{6,7}

Factors such as difference in classification of occlusion relationship, development period of study sample and differentiating normal and abnormal with in the same population, prevalence of different types of malocclusion in the study population can also give valuable results.⁸

¹ Assistant Professor, Department of Prosthodontics, Dow Dental College, Dow University of Health Sciences, Karachi. For Correspondence: B-2-3, Maymar lake View Apts, Block 5, Clifton, Karachi. E-mail: taimoor.links@gmail.com

² Assistant Professor, Department of Community Dentistry, Dow Dental College, Dow University of Health Sciences, Karachi.

³ MBBS, King Edward Medical College, King Edward Medical University, Lahore

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The main purpose of this study was to identify the dependence of Angles malocclusion (class 1, 2 and 3) in relation to different age groups and gender and their stability over time period in local population. Such information could be a valuable guide in treatment planning of any prosthodontics procedure such as fixed and removable partial dentures.

METHODOLOGY

Non-random, purposive sampling method was applied to select the study participants. Individuals containing at least 28 permanent teeth will be included with no age limit. Individuals undergoing orthodontic treatment, having bridges, undergone through occlusal splint therapy and recent extractions were excluded due to the potential of alteration in original occlusion. Individuals present in Dow Dental College either as patients, patients' attendants, doctors, lower staff fulfilling the inclusion criteria was the target population. Study was undertaken during one year period from November 2012 till October 2013. Subjects were distributed with respect to self-applied age groups. The cheeks were fully retracted with a mouth mirror to obtain a direct lateral view of the Angles malocclusion (class 1, class 2 and class 3) with respect to age groups and gender. Informed consent was taken from participants as well.

RESULT

In this study 600 individuals were selected with age ranged from 15-50 years at OPD Dow Dental College during 2012-2013. The mean age was 26.66 ± 7.98 . Out of 600 individuals 375 (62.5%) were females and 225 (37.5%) were males (Table 1). The female to male ratio was 1.6:1 (Fig 1). Among 600 participants we observed Angle's Class I in 376 (62.6%), Class II in 163 (27.1%) and Class III in 61 (10.1%) (Table 1).

Pearson chi-square was applied to find out the relationship between Angles malocclusion (class 1, 2, 3) to four different age groups i.e. Group 1 (less than 20) having class 1 in 78 participants, Class 2 in 35 and Class 3 in only 15 giving a total of 128. Group 2 (between 21-29 years) having 217, 81 and 30 respectively with a total of 328. Group 3 (between 30-39 years) having 55, 30 and 9 respectively having a total of 94. Group 4 (more than 40 years) having 26, 17 and 7 respectively having a total of 50. Calculations showed value (0.465) greater than p-value of 0.05 which reveals that occurrence of class 1, 2, and 3 are not dependent to age groups (Table 2).

Out of 375 males, 147 had class 1 followed by 51 and 27 in class 2 and class 3 respectively. However females with a total of 225 were observed to have class 1 in 229 and subsequently 112 and 34 in class 2 and class 3. P-value 0.118 revealing Angles Malocclusion being independent to gender (Table 3).

DISCUSSION

The current study was conducted to determine the prevalence of Angles classification of malocclusion in relation to different age groups and gender of general population of Karachi. Since Angles classification is fairly easy method to classify malocclusion, used previously in literature too.^{9,10} We used it as the standard to classify our subjects into three categories of malocclusion and then compared our findings with similar studies conducted in the past.

In our study, out of 600 participants males were 225 (37.5%) while 375 (62.5%) were females. The female to male ratio was 1:1.6 (Fig 1) which is quite different from the studies conducted by M. Oshagh et al¹¹ who expressed M:F of 4:5 similar to that expressed by Willem et al¹⁴ 4:6 and also Jones¹² and Sayin and Turkkahraman.¹³ There was no statistically significant difference

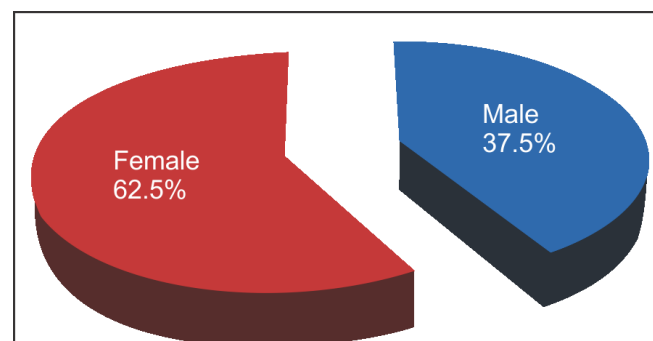


Fig 1: Gender of the participants

TABLE 1: DEMOGRAPHIC CHARACTERISTIC AND PREVALENCE OF PARTICULAR CLASSES AND GUIDED OCCLUSIONS IN STUDIED SUBJECTS

Characteristics	Frequency	%age
Age		
Mean \pm SD	26.66 \pm 7.98	
Gender		
Male	225	(37.5)
Female	375	(62.5)
Class 1	376	(62.6)
Class 2	163	(27.1)
Class 3	61	(10.1)

TABLE 2: RELATION BETWEEN AGE CATEGORY AND DIFFERENT ANGLE CLASSES

Age	Class 1		Class 2		Class 3		Total
	present	%	present	%	present	%	
<20	78	(60.93)	35	(27.3)	15	(11.71)	128
21-30	217	(66.15)	81	(24.69)	30	(9.14)	328
31-40	55	(58.51)	30	(31.91)	9	(9.57)	94
41-50	26	(52)	17	(34)	7	(14)	50
Total	376	(62.66)	163	(27.16)	61	(10.16)	600

*Pearson chi square 0.465

TABLE 3: RELATIONSHIP OF ANGLES MALOCCLUSION IN RELATION TO GENDER

Gender	Class 1	Class 2	Class 3	Total
Male	147	51	27	375
Female	229	112	34	225
Sum (m+f)	376	163	61	600

*Pearson chi square 0.118

observed for any occlusal traits between the males and females ($P > 0.05$) as it was also seen in similar studies of Borzabadi and Ajayi.^{14,15}

We found that out of 600 participants, 376 (62.6%) had class 1, 163 (27.1%) had class 2 while only 61 (10.1%) had class 3 malocclusion which was similar to the result found by Sari et al¹⁶ who concluded that among the 1602 Turkish patients studied 61.7% had class 1, 28% had class 2 and 10% had class 3 malocclusion. In the same year Sayin¹³ also conducted a similar study in 1356 patients and declared the prevalence of class 1, 2 and 3 malocclusion as 64%, 24% and 12% respectively. Nonetheless our result depicted difference from the studies conducted by various researchers including Jones¹² who studied 132 Saudi patients in 1987 and declared the prevalence of class 1, 2 and 3 to be 53.8%, 24% and 12.9% respectively. Also Yang¹⁷ studied 3305 patients in Seoul finding the presence of class 2 and 3 malocclusion to be 15.5% and 49% respectively. Abualhaija et al¹⁸ in 2005 discovered the prevalence to be 19% and 1.4% of class 2 and 3 respectively in Jordanian school children. In another study in Luthian children¹⁹ it was found to be 27.7% for class 2 and 2.8% for class 3. Similarly school-age children attending the orthodontics department of Shiraz University of Medical Sciences were found to have class I, II and III malocclusion of first molars 52.0%, 32.6% and 12.3% respectively.¹¹ Another study conducted on Jordanian population in 2010²⁰ disclosed the prevalence of class 1, 2 and 3 to be 68.4%, 39% and 13% respectively which showed some similarity to our result.

Participants were divided into four age groups i.e. Group 1 (less than 20 years), Group 2 (between 21-29 years), Group 3 (between 30-39 years) and Group 4 (more than 40 years) and found that the prevalence of malocclusion is not dependent on age which was similar to the study conducted by Louis et al²¹ on population of Uganda and Tod et al²² on Australian adult population.

It is obvious that the result showed some variation from similar studies which might be due the selection criteria of the participants. Our study only included people with 28 natural teeth while all others who were undergoing some dental treatment were excluded, including both males and females ranging 15-50 years in age.

CONCLUSION

The measured values of specific traits of occlusion may be subject to significant change due to growth and maturation of the dentofacial structures. Some traits may show improvement while others may show deterioration. Cross-sectional studies of younger population groups are to be used for research in the long-term physiological effects of malocclusion to know if certain and specific malocclusion traits are stable over time. In this cross-sectional study, the prevalence of malocclusion traits did not change with class 1 being more prevalent in all the age groups and gender followed by class 2 and class 3. Females were observed to have more class 1 than males. However all the classes are independent in relation to both the age groups and gender.

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