

Prevalence Of Different Types Of Malocclusion Among School Children In Makkah Governorate of Saudi Arabia

Research Article

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Abstract

The purpose of this study was to assess the status of occlusion among school children in Makkah governorate of Saudi Arabia.

Materials and Methods: The sampling included 289 adolescents with age range 14-17 years. The sample was randomly selected from schools in Makkah governorate to determine the status of their occlusion.

Design: Randomized cross-sectional study. The examiner assessed different type of malocclusion, crowding, diastema, cross-bite, overjet and overbite. These occlusal parameters were examined by one examiner using a mouth mirror, small light source and metallic ruler.

Conclusion: This study revealed predominance of Class I molar among Saudi School children in Makkah city. Normal overjet and overbite were frequent findings. The most prevalent malocclusion trait was crowding.

Introduction

Malocclusion is considered one of the most common dental problems together with dental caries, gingival disease and dental fluorosis [12]. Malocclusion may cause unpleasant appearance, impaired oral function, speech problems, temporomandibular disorders, increased susceptibility to trauma and periodontal disease [30]. Identifying occlusal status in particular population provides important information on treatment needs and enables the government to draw the appropriate preventive and treatment programs [7].

Planning orthodontic treatment service requires baseline data on the prevalence of different types of malocclusion.

Several studies that investigated the prevalence of malocclusion in different population groups have been reported, for instance:- (Foster and Menezes, 1976) [16].

(Massler and Fränkel 1951) [29], (Altemus, 1959) [6] (Al-Emran et al., 1990) [4] (Kerosuo et al., 1991) [25] (Hill 1992) [23] (Lew et al., 1993) [27] (Otuyemi and Abidoye, 1993) [35].

(Ng'ang'a et al., 1996) [32] (Harrison, R. L. and Davis, D. W. 1996) [17] (Johannsdottir et al., 1997) [24] (Thilander et al., 2001) [38].

The results of these studies revealed wide variations between those populations. The variations could be due to the differences in sample size, ethnicity, subjects age, and registration methods [2].

A previous study was done to investigate the prevalence of malocclusion in Riyadh region, Saudi Arabia, it concluded that "the Occlusal Status among 12-16 Year-Old School Children in Riyadh, Saudi Arabia revealed predominance of Class I molar and canine. Normal overjet and overbite were frequent findings. The most prevalent malocclusion trait was crowding followed by spacing [7]. But due to different of ethnic origin of the people in Riyadh region and the Makkah governorate of Saudi Arabia we will apply the same study on population from Makkah governorate.

Aim of the Study

The aim of this study was to provide a description of the occlusal

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status of the permanent dentition among adolescents with an age range between 14-17 years in Makkah governorate of Saudi Arabia.

Materials and Methods

A cross sectional study was conducted at Makkah governorate, Saudi Arabia.

3 schools were randomly selected from different areas of Makkah governorate. A total of 289 aged 13-17 years were randomly selected and examined. The ethical approval was given by UQUDENT. All the students were informed about their rights to participate in the study and consent forms were signed.

Inclusion Criteria

- No previous orthodontic treatment done.
- Secondary dentition present with no remaining deciduous teeth.
- All had their first permanent molars.
- No previous extraction.
- No caries lesion that causes change in the tooth size or shape.

Clinical examination was carried out in the schools within the students' classrooms by one experienced examiners using a mouth mirror, small light source and metallic ruler. The following parameters were recorded:

1. Angle classification system: was recorded as Class I when the mesiobuccal cusp of the maxillary first permanent molar occluded with the mesiobuccal groove of the mandibular first permanent molar on both sides. A Class II or Class III molar relation was recorded when the mesiobuccal cusp of the maxillary first permanent molar occluded at least one-half cusp width anterior or posterior to the mesiobuccal groove of the mandibular first permanent molar on both sides, respectively.

2. Crowding: It was recorded when the total sum of slipped contacts measured in the segment was at least 2 mm.

3. Overbite: The vertical overlap of incisors measured to the nearest half millimeter vertically from the incisal edge of the maxillary right central incisor to the incisal edge of the corresponding mandibular right incisor.

Overjet: It was measured with millimeter ruler as the distance from the most labial point of the incisal edge of the maxillary in-

cisors to the most labial surface of the corresponding mandibular incisor.

4. Anterior cross bite: It was recorded when one or more of the maxillary incisors occluded lingual to the mandibular incisors.

5. Posterior cross bite: It was recorded when the buccal cusp of one or more of the maxillary posterior teeth occluded lingual to the buccal cusps of the opposing mandibular teeth.

6. Diastema: It was recorded when the space more than 1 mm between central incisors.

Method of Measurement

Variable	Method of measurement
Sagittal occlusion	Angle classification
Overjet	increased if it's more than 3 mm, decreased if it's less than 2 mm
Overbite	increased if it's more than 2 mm, decreased if it's less than 2 mm
Crowding	overlapping of on tooth with respect to other tooth
Diastema	space more than 1 mm between central incisors
Crossbite	in one or more maxillary teeth are placed palatal\lingual to the mandibular teeth

Result

Class 1 malocclusion had the highest frequency of 67.13%, class II div-1 was 14.53%, class II div-2 was 10.7% , class III was 7.61% (Table 1).

The normal overjet and overbite values were highest 57.4% , 52.6% , respectively (Table 2).

Frequency of Crowding was observed in 63% , diastema was present in 8.3%, anterior cross bite was 17% and posterior cross bite was 21.4% (Table 3).

Discussion

In studies that were done on other populations, variations in the prevalence values of normal occlusion and malocclusion were evident. Some of the studies showed high percentage of normal

Table 1.

Angel classification	N	%
Class I	194	67.13%
Class II (d-1)	42	14.53%
Class II (d-2)	31	10.7%
Class III	22	7.61%
Total	289	100%

Table 2.

	normal	increase	decrease	Total
Over jet	166 (57.4%)	74 (25.6%)	49 (17%)	289 (100%)
Over bite	152 (52.6%)	61 (21.1%)	76 (26.3%)	289 (100%)

Table 3.

	N	%
Crowding	183	63.3%
Diastema	24	8.3%
Anterior cross bite	49	17%
Anterior cross bite	62	21.4%

occlusion while others did not.

Although many studies have been published that describe the prevalence and types of malocclusion. Some variabilities between their findings and our existed due to the varying methods and indices used to assess and record occlusal relationships, age differences of the study populations, examiner subjectivity, specific objectives, and differing sample sizes. Subjects in our study were randomly selected and were in the permanent dentition stage.

Our results showed that the most common type of molar relation was Class I followed by Class II relation, and Class III malocclusion. These results were in agreement with previous Saudi studies that measured dental malocclusion in orthodontic patients [3, 5].

Our results were also in agreement with studies which were performed in other countries that measured malocclusion in orthodontic patients like Iraq, Nigeria and Turkey [15, 33, 37]. However, it disagreed with the findings of Gul-e-Erum and Fida (2008) [22] who found that Pakistani orthodontic patients have a higher percentage of Class II malocclusion (70.5%). This might be due to the ethnic difference between the population used in their study.

When our results were compared to studies conducted on non-orthodontic population in other countries, we found that studies in USA, Israel, Libya, Sudan, Egypt, China, Lebanon, Nigeria, Jordan, Iran, Brazil and Tanzania reported that the most common type of dental malocclusion was Class I, followed by Class II then Class III and that was similar to our results ([1, 2, 8, 10, 11, 13, 14, 18, 19, 21, 27, 28, 30, 34, 36] Silva & Kang, 2001 ; Grando et al., 2008).

On the other hand, a study by Gelgor et al., (2007) [20] that examined 2,329 teenagers in central Anatolia, Turkey, revealed that the most common type of malocclusion was Class II division 1 (40%) [20].

Conclusion

This study revealed predominance of Class I molar among Saudi School children in Makkah governorate. Normal overjet and overbite were frequent findings. The most prevalent malocclusion trait was crowding. This study provides descriptive information for occlusion status that will be valuable in planning the appropriate preventive and treatment programs in Makkah governorate.

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