



## IMPACT OF MALOCCLUSION ON QUALITY OF LIFE AND ORAL HEALTH STATUS AMONG 12-15 YRS OLD CHILDREN IN MEERUT – A CROSS SECTIONAL SURVEY

### Pedodontics

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### ABSTRACT

A limited amount of systematic literature reviews on the association between malocclusion and oral health quality of life summarize inconclusive result. Therefore we conducted a systematic review and meta-analysis on the association of malocclusions with oral health status in children the concept of Oral Health-Related Quality of Life (OHRQoL) corresponds to the impact of oral health or disease on an individual's daily functioning, well-being or overall quality of life.

**Aim:** Impact of malocclusion on quality of life and oral health status among 12 to 15 year old children.

**Materials and Method:** The present study was done to assess the impact of malocclusion on quality of life and oral health status among 12-15 years old children of Meerut City.

**RESULT:** Among the total sample of 820 subjects, (25.9%) had defined malocclusion and (23.8%) had severe malocclusion. The total OHIP score of this sample size ranged from 0 to 32. Functional limitation domain of OHIP-14 displayed highest score  $3.1 \pm 1.9$

**CONCLUSION:** Defined and severe malocclusion had impact on Oral Health related Quality of life but it showed non-significant impact on oral health status.

### KEYWORDS

Oral Health-Related Quality of Life, oral health impact profile, World Health Organization, Dental Aesthetic Index.

### Introduction

Malocclusion is defined as an irregularity of the teeth or a mal-relationship of the dental Arches beyond the range of what is accepted as normal.<sup>1</sup> Considering the varying distribution of malocclusion among the wide age ranges and mixed ethnicity, it is vital to estimate the prevalence of malocclusion and its impact on oral health status.<sup>2,3</sup> Impaired facial aesthetics pose various psychosocial problems to the affected individuals. Thus, understanding the physical, social and physiological effects of malocclusion provide insight into its consequences on the daily lives of affected individuals.<sup>4</sup> The concept of oral health related quality of life (OHRQoL) corresponds to the impact of oral health or disease on an individual's daily functioning, well-being and overall quality of life.<sup>5,6</sup>

### AIM & OBJECTIVES:

#### Aim

Impact of malocclusion on quality of life and oral health status among 12 to 15 year old children.

#### Objectives

To assess the prevalence of malocclusion in 12 to 15 year old children.

To assess the impact of malocclusion on quality of life.

To assess the effect of malocclusion on oral health status.

#### Materials and Method:

The present study was done to assess the impact of malocclusion on quality of life and oral health status among 12-15 years old children of Meerut City. It was conducted in Department of Pedodontics and Preventive Dentistry, Kalka Dental College and Hospital, Meerut.

#### Sampling:

20 schools were randomly selected from the list of schools of Meerut to complete the sample size of 820 school going children of age group of 12 to 15 yrs.

#### RESULT

The current study shows that among 820 subjects, 434 (52.9%) were male and 386 (47.1%) were female.

**Table 1: Distribution of mean of DAI and age**

	N	Minimum	Maximum	Mean	Std. Deviation
DAI	820	22.0	33.0	28.480	3.0659
AGE	820	12	15	13.31	1.024

Table 1: shows that among 820 subjects, the mean age was 13.31  $\pm$  1.024 where as DAI mean was 28.480 ( $\pm$ 3.0659)

**Table 2: Frequency distribution of subjects according to malocclusion**

	Grade	Frequency	Percent
Without abnormality		118	14.4
Mild malocclusion	Grade I	295	36.0
Defined malocclusion	Grade II	212	25.9
Severe malocclusion	Grade III	195	23.8
Total		820	100.0

Table 2: showed among 820 subjects, 295 subjects (36%) suffered from mild malocclusion whereas 212 (23.8%) had defined malocclusion and only 118 (14.4%) subjects were without any abnormality.

**Table 3: Frequency distribution of male and female according to their severity of malocclusion**

Types of malocclusion		Sex		Total
		Male	Female	
Mild malocclusion	Count	63	55	118
	% within DAI grades	53.4%	46.6%	100.0%
Defined malocclusion	Count	152	147	299
	% within DAI grades	50.8%	49.2%	100.0%
Severe malocclusion	Count	218	185	403
	% within DAI grades	54.1%	45.9%	100.0%

Pearson Chi-Square=.750,d.f.2,p=.687

Table 3 shows the frequency distribution of male and female according to their DAI grades. On applying Pearson Chi-Square test we have found that there is no significant association of patient's sex with their DAI grades,  $p > 0.05$ .

The present study revealed that among 820 subjects, 379 (46.2%) subjects had 0.5 mm midline diastema, 142 (17.3%) had 3 mm of diastema and absence of midline diastema in 299 (36.5%) subjects. The current study also shows that, out of 820 subjects, 105 (12.8%) subjects had one segment crowding (with score 1), and 715 (87.2%) subjects had no crowding.

### Discussion

Malocclusion is defined as an irregularity of the teeth or a malrelationship of the dental arches beyond the range of what is accepted as normal. Malocclusion can cause psychosocial problems related to impaired dento-facial aesthetics, disturbances of oral function, such as mastication, swallowing, and speech, and greater susceptibility to trauma and periodontal disease. The publication of the Angle classification in 1899 was a milestone in the development of orthodontics and they classified the malocclusions and his method has probably been the most used instrument to record malocclusions until now.<sup>7,8</sup> The Dental Aesthetic Index (DAI) was developed in the USA and integrated into the International Collaboration Study of Oral Health Outcomes by the WHO as an objective simple and easy to use universally accepted cross-cultural index that links clinical and aesthetic components mathematically to produce a single score.<sup>9,10,11</sup> Being recommended to be used in epidemiologic research to establish the orthodontic treatment need and the priority of orthodontic care in public programs, DAI has been a widely used index of assessing malocclusion with high reliability.<sup>12,13</sup>

### DAI

#### Criteria used for the DAI:

#### Absence of incisor, canine and premolar

Consider the number of permanent incisors, canines and premolars absent in the upper and lower arches. In this index, 10 teeth must be present in each arch, so if there are less than 10, the difference is the number of absences. The absence history of all anterior teeth was verified in order to really know if extractions were made for esthetic purpose. The teeth were not recorded as missing if the spaces were closed; if a primary tooth was in the position of his successor that had not yet erupted; or if an absent incisor, canine or premolar were replaced with fixed prostheses.

#### Crowding in the incisor region

The incisors region of the upper and lower arches were examined for verification of crowding. The crowding in the incisor region is the condition in which the space between the right and left canine is insufficient to accommodate all four incisors in normal alignment. The crowding in the incisor region was recorded as follows: 0 = No crowding, 1 = Only one region with crowding, 2 = Both regions with crowding.

#### Spacing in the region of incisors

For this condition the upper and lower arches were considered. As determined, when it is measured in the incisor region, spacing represented the condition in which the total available space between the right and left canines exceed the required space to accommodate all four incisors in normal alignment. The record considered: 0 = Without spacing 1 = One region with space. 2 = Both regions with spaces.

#### Diastema

The space in millimeters between the contact points of the mesial surfaces of maxillary central incisors were considered.

#### Anterior jaw misalignment

Consider the positions and rotations in relation to normal alignment of teeth for the four incisors in the upper jaw. The misalignment location between adjacent teeth was measured by the IPC periodontal probe. The misalignment in millimeters was estimated by the probe marks.

#### Anterior maxillary overjet

It was measured as the horizontal relationship between the upper and lower incisors with the teeth in centric occlusion. The distance between the labial incisal edge of most prominent maxillary incisor and the incisor buccal surface was measured with the corresponding periodontal probe parallel to the occlusal plane. For edge to edge incisor occlusion, the score was considered zero.

#### Anterior mandibular overjet

The mandibular overjet was recorded when a lower incisor presented with anterior or buccal protrusion in relation to the opposite upper incisor, or in crossbite. The measurement was performed in the same manner as for the upper arch.

#### Vertical anterior open bite

Was considered as the lack of vertical overlap between any opposing incisor pair with the measurement performed with the periodontal probe.

### CONCLUSION

#### The present study, following conclusion can be drawn:

1. Among the total sample of 820 subjects, (25.9%) had defined malocclusion and (23.8%) had severe malocclusion.
2. The total OHIP score of this sample size ranged from 0 to 32.
3. Functional limitation domain of OHIP-14 displayed Highest score  $3.1 \pm 1.9$
4. The mean score of DMFT was  $1.75 \pm .499$
5. The mean score of periodontal status was  $1.65 \pm 1.428$
6. Defined and severe malocclusion had impact on Oral Health related Quality of life but it was not significant except psychological discomfort domain of OHIP-14 in females.
7. Defined and severe malocclusion showed non significant impact on oral health status.

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