

## Prevalence of deep bite in orthodontic patients in Sulaimani city A Cross-sectional Study

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**Abstract:** The aim of this study was to find out the prevalence of deep bite among orthodontic patients in Sulaimani city. Pre-treatment dental casts of 279 patients were examined and finally dental casts of 230 patients fulfilled the selection criteria and were included in this study. The dental casts were assessed and according to the amount of vertical overlap of upper teeth on the labial surface of lower teeth in centric occlusion, they were divided into 3 groups: Normal over bite, deep bite and open bite. Normal over bite was found in 51% of the patients and deep bite in 41% where as open bite was found in 8% of the patients. Half of orthodontic patients had over bite abnormality. Among the patients with deep bite, mild degree of deep bite represents majority of the cases.

**Keywords:** Malocclusion, Deep bite, Over bite, Open bite.

### I. Introduction

Deep bite is one of the frequently seen malocclusions next to crowding[1]. It is defined as “vertical overlap of upper teeth on the labial surface of lower teeth in centric occlusion when exceeds the normal range of 1-2 mm” [2]. Upadhyay & Nanda [3] define overbite as “the amount and percentage of overlap of the lower incisors by the upper incisors”. An ideal overbite ranges from 5-25% overlap. This deep bite is either described in millimeters or as the percentage of mandibular incisor crown length overlapped by maxillary central incisors. Since the crown length of the lower incisors significantly varies in individual, a notation of the overbite in percentage is more descriptive and desirable.

Among the factors associated with the development of deep bite are:

Molar infra occlusion, incisor supra occlusion, excessive over jet, canine position, mesiodistal width of the anterior teeth, incisor angulation, molar cusp height, failure of age-related natural opening of the deep bite, mandibular ramus height, and vertical facial type [2]. Deep bite is a frequently seen problem especially in patients with class II malocclusion [4]. The prevalence of severe deep bite varies between racial groups. For example, it is almost twice as common in Caucasian Americans compared to African Americans and Hispanics [5]. Despite the fact that the prevalence of deep bite in the population has been evaluated by many studies, but few studies evaluated deep bite in orthodontic patients. The aim of this study was to assess the overbite condition of orthodontic patients in Sulaimani city.

### II. Materials And Methods

This cross-sectional, observational study, has been conducted on pretreatment study casts of 279 patients attending and seeking orthodontic treatment in a private clinic in Sulaimani city, Kurdistan region-Iraq, from 01-01-2013 till 31-12-2013. All patients with permanent dentition have been included but 49 patients with fractured, crowned or missed incisors, patients with previous orthodontic treatment and patients with class III incisor relationship were excluded.

For deep bite evaluation, a methodology was used which was used by Saqib et al[6]. Scoring of the study casts was done according to following criteria:

Score	Overbite severity
0.0	< 1/3 lower incisor coverage
1.0	1/3 to 2/3 coverage
2.0	2/3 up to fully covered
3.0	fully covered

The casts were divided into three groups depending on the amount of vertical overlap of upper teeth on the labial surface of lower teeth in centric occlusion

Normal Over bite      Over bite Score 0.0  
 Deep bite              Over bite Score 1.0, 2.0, 3.0.

A person was said to have open bite if there was the lack of vertical overlap of upper teeth on the labial surface of lower teeth in centric occlusion [6].

### III. Results

The age range of the sample was 11-45.5 years, with a mean age of 19.9year (S.D. 6.9).Sixty-six point five percent of the sample were females(153 patients) and thirty-three point five percent were males (77 patients). As will be seen from Table 1 normal overbite were found in 117 patients (51%), out of 230 patients. Thus 113 patients (49%) had some overbite abnormality. Deep Bite was observed in 95 patients (41 %); while 18 patients (8%) had open bite.

**Table 1: Number and Percentage of Subjects according to Overbite Severity.**

Overbite Severity		No. of Patients		Percentage
Normal Overbite	117	Male	43 (36.7%)	51%
		Female	74 (33.3%)	
Deep Bite	95	Male	28 (29.5%)	41%
		Female	67 (70.5 %)	
Open Bite	18	Male	6 (33.3%)	8%
		Female	12 (66.7%)	
Total	230			100%

As far as the severity of deep bite is concerned, it is evident from Table 2 that out of 95 patients, 84 of them(88.4%) were having mild degree of deep bite (1/3 to 2/3 lower incisor coverage). Moderate degree of deep bite was shown by 7 patients patients (2/3 up to full coverage of lower incisor crowns), while 4 patients were found to have severe deep bite (full coverage of lower incisor crowns).

**Table 2: Distribution of Severity of Deep Bite.**

Severity Of Deep Bite	Patients	
	Number	Percentage
1/3-2/3 Coverage	84	88.4%
2/3 Up to Fully Coverage	7	7.4%
Fully Covered	4	4.2%
Total	107	100%

### IV. Discussion

This study was performed on study casts of patients attending and seeking orthodontic treatment at a private clinic. The subjects were not taken from the general population. Patients seeking orthodontic treatment were of both sexes; including preadolescents, adolescents and adults.

The mean age of the studied sample was 19.9 years, this goes in accordance with the finding of the study done by Abuelazayem et al [7] with a mean age of 19.7 years.

Tow third of our patients were female (66.5%) and one-third (33.5%) were males, this will show that females were more concerned about their aesthetics than males, this is in agreement with finding of some studies [7], [8] and in disagreement with the finding of Naeem et al [6] who showed that 3/4 (75 patients) of the patient were females and 1/4 (25 patients) were males.

Deep bite were found in 95 patients (41%) which is lower than findings of Naeem et al [6] 76% , findings of Abuelazayem et al [7] 65.6% and findings of Gul-e-Erum 70.4% [9], but higher than the results of Celikoglu et al who found 32.1% [10] . Out of this 95 patients, 28 (29.5%) were males and 67 (70.5%) were females. Similar results were found by Naeem et al [6].

Regarding the severity of deep bite, out of 95 patients with deep bite, the majority (88.4%) showed mild degree of deep bite wich is higher than the finding of Naeem et al [6] but similar to the result of Abuelazayem et al [7]. Moderate degree of deep bite found in (7.4%) which is lower than findings of other authors [6], [7]. Finally severe deep bite was showed by (4.2% ) lower than findings of Naeem et al [6] and Abuelazayem et al [7] who found (8%).

## V. Conclusion

Following points can be concluded:

- 1- About 2/3 of the orthodontic patients were females.
- 2- Half of orthodontic patients had overbite abnormality.
- 3- Mild degree of deep bite represents 88.4% of the deep bite cases.
- 4- Deep bite was more frequent in females 70.5% than in males 29.5%.

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