

FREQUENCY OF ANTERIOR OPEN BITE PATIENTS REPORTING TO AFID, RAWALPINDI

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ABSTRACT

The purpose of the present study was to calculate the frequency of an anterior open bite in a set of population comprising of military as well as civilian patients reporting to orthodontic department of Armed Forces Institute of Dentistry (AFID), Rawalpindi, from all over the country. Out of a total sample of 1856 patients reporting to AFID from 2001 through 2008, 1800 patients fulfilled the inclusion criteria. Dental records including photographs and casts were assessed for the presence of anterior open bite. The frequency of open bite from the total sample and its percentage with respect to gender and age was calculated.

The frequency of open bite was found to be 4%. The mean age of patients was 21.6 years. Females were twice as frequently affected as males. Simple anterior open bite was more prevalent. It is self evident that this is one of the most difficult malocclusions to manage and maintain in orthodontics. Its treatment should be primarily etiology oriented & preferably customized so as to prevent the chances of relapse.

Key words: Anterior open bite, Posterior open bite, frequency, AFID, Pakistan.

INTRODUCTION

Malocclusion is a developmental disorder of the craniofacial complex that affects jaws, tongue and facial muscles. It develops as a result of an interaction of genetic and environmental factors.

This disorder may appear in the primary dentition, where anterior open bite and posterior cross bite are the most prevalent conditions¹. Etiology of open bite is multi factorial, including unfavorable growth patterns, congenital (macroglossia) or acquired including tongue thrust, abnormal tongue posture,² mouth breathing, sucking habits (thumb sucking), neuromuscular deficiencies (muscular dystrophy), trauma to the condyles, arrested condyler growth ,idiopathic condyler resorption and the genetic factors.³

Open bite is an occlusal characteristic where the upper and lower teeth are not in contact and vertical overlap does not exist at all ⁴. It is classified as dental

or skeletal and anterior or posterior, which is either unilateral or bilateral. It may occur as simple or complex ⁵. Simple anterior open bites are characterized by vertical separation of anterior teeth, extending up to premolars, whereas in complex anterior open bite, the vertical separation extends right up to the molars. Dental open bites are primarily due to reduced dentoalveolar vertical heights. Other features are divergent maxillary and mandibular planes from the premolars, mesial inclination of posterior teeth and lack of normal curve of Spee in the lower arch ⁶

Based on severity, vertical separation of 0-2 mm is moderate, 3-4mm is severe and more than 4mm is considered extreme⁷ Its diagnosis is subjective based on clinician's plane of evaluation or patient's angulation of occlusal plane. Taking the occlusal plane into consideration a defined anterior open bite may or may not be evident from the frontal view; the steeper the

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occlusal plane the less evident the anterior open bite becomes.

Parameters of skeletal open bite are; steep mandibular plane angle, increased lower face height and obtuse gonial angle, in addition to divergent maxillary and mandibular occlusal planes from the molars. It is usually accompanied with an excessive vertical growth of detoalveolar complex, acute intermolar and interincisal angulation, anteriorly tipped up palatal plane and extruded molars. Of all these the steepness of mandibular plane is the key skeletal finding in skeletal open bite.⁸ On clinical examination a large interlabial gap is most evident in all skeletal open bite cases⁹.

Early efforts for open-bite correction included the use of bite blocks in the late 1980s, fixed appliance and vertical elastic combinations in 1990s, and new face mask designs at the beginning of this millennium. All of these proved to be effective in passive intrusion of the maxillary posterior segment; however, the actual correction was achieved primarily through the extrusion of incisors or by preventing passive eruption of posterior teeth. Recently osseointegrated implants has gained tremendous repute as an absolute anchorage unit for open bite corrections.¹⁰ The prevalence of anterior open bite ranges from 1.5% to 11% and varies between ethnic groups and by age and dentition.¹¹ Since the prevalence in different populations is drastically different, it becomes imperative to calcu-

late this frequency in our own subset of Pakistani population.

MATERIALS AND METHODS

This study was conducted on patients presenting to the department of orthodontics, AFID, to determine the frequency of anterior open bite in our subset of population. A total of 1856 consecutive patients presenting to AFID between June 2001 and January 2008 were included in the study. All orthodontic patients in their permanent dentition with adequate dental records were included in the study. Patients with craniofacial syndromes were excluded from the study. 56 patients were excluded from the study because they did not fulfill the inclusion criteria.

Dental records of the remaining 1800 patients were screened for the presence of anterior open bite and the types, whether simple or complex was also observed. Photographs and dental casts of patients were reviewed by a single operator.

Gender distribution and mean age of the patients presenting with anterior open bite was calculated.

RESULTS

Out of a total sample of 1800 patients 99(n), 4% had open bite malocclusion.

The mean age of the patients presenting with open bite was 21.5 years.

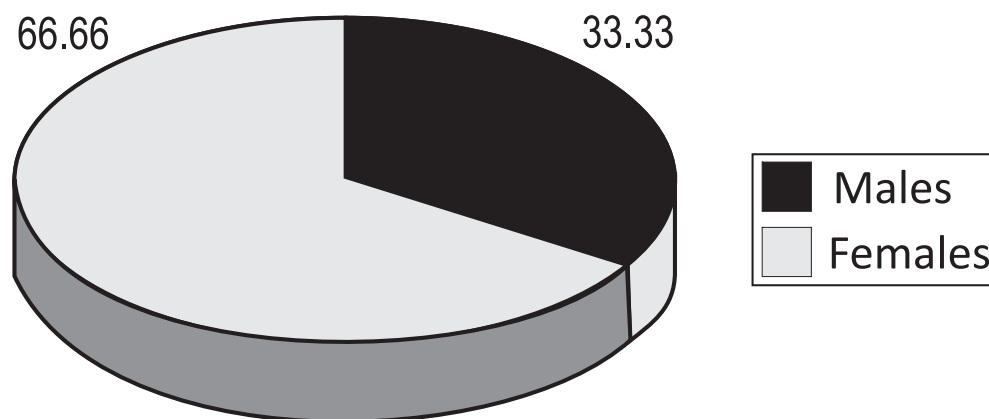


Fig. 1: Male to Female Ratio

The male to female ratio in our results was 1:2. 33.33% (24) patients were males and 66.6% (49) were females, while 19.19% had complex anterior open bite and 80.82% had simple anterior open bite.

Anterior Open Bite	
73(n) 4%	
Simple	Complex
80.82%	19.18%

TABLE 1: FREQUENCY OF ANTERIOR OPEN BITE

DISCUSSION

.Open bite seems to be governed by racial factors more than the dental skeletal features. This is evident by the variable prevalence in people from different racial and ethnic groups. Kelly¹¹ reported a prevalence of 3.5% in white population in contrast to 16.5% in black population. Proffit et al¹² reported a prevalence of 3.5% in patients from 1-17 years of age. A prevalence of 10.2% exists in a Nigerian sample¹⁴ and 2% in Argentinean sample¹⁵.

Our study revealed a prevalence of 4% in our subset of Pakistani population. This was closest to the Ugandan sample where the prevalence was 1-4%.¹⁶ Al-Emran¹⁷ found 6.6% in Saudi Arabian adolescents, Otuyemi and Abidoye¹⁸ reported 7 and 7.3% in suburban and rural Nigerian school children respectively. Nganga¹⁹ reported 8% in Kenya. According to Batarngaya²⁰ the frequency of open bite in the Ugandan sample ranged from 1-4% while Lauc²¹ reported 3.1% in Havai island population and Behbehani²² found 3.5% in Kuwaitis. In our study, AOB specially the simple kind was far more prevalent. The male to female ratio in our study was 1:2. This is close to the Belgian ratio of 2:3. When the age of patients was analyzed some of the interesting facts were revealed. The first fact was that there was more demand of orthodontic treatment from age 13 to 16 years showing that teenagers are more worried about their facial appearance. Then there was steady decline from 17-20 years, the time when patients were

preparing for professional colleges. Finally there was rise in orthodontic patients at age 21 years when patients were in professional colleges.

Considerable evidence exists to indicate that there is a high variation in prevalence and incidence of anterior open bite reported in the literature in 1988-1991 national survey of malocclusion in the united state was conducted as part of the National Health and Nutrition Examination Survey (NHANESIII). When assessing the vertical relationships, less than 5% of the 7000 US children and youths had an open bite. NHANESIII data for all ages showed that 6.6% of blacks had an open bite comparing with 2.9% for whites and 2.1% for Mexican-Americans.¹³ We did not focus on the etiological basis of open bite, nor did we observe whether the bite was skeletal or dental in origin. We will focus on these aspects in the future studies.

CONCLUSION

Open bite malocclusion not only cripples the patient esthetically, but functionally as well. It is notorious to manage and even more so to retain.

It's prevalence in our society is an indication toward the fact that further larger scale studies are required to ascertain the prevalence in our population.

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