



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.2604664>

Available online at: <http://www.iajps.com>

Research Article

### A DESCRIPTIVE ASSESSMENT OF ANTERIOR OPEN BITE OCCURRENCES ON A TARGET SAMPLE: A CROSS- SECTIONAL RESEARCH

<sup>1</sup>Hamna Manzoor, <sup>2</sup>Ambreen Akram, <sup>3</sup>Kashfa Akram

<sup>1</sup>Dental Section Allied Hospital, Faisalabad, <sup>2</sup>Hamdard University Dental Hospital Karachi,

<sup>3</sup>Dental Section Allied hospital Faisalabad.

Article Received: January 2019

Accepted: February 2019

Published: March 2019

**Abstract:**

*Anterior open bite exists as a gap which is acute and vertical between upper incisors and lower incisors along with centric occlusion teeth. Multiple factors are involved in the anterior open bite aetiology. These factors have multiple environmental and genetic features which are reflected in the shape of the palate, cleft lips and muscular dystrophy disorders also known as pathologic disorders with associated developmental factors. The objective of this particular research was to determine the anterior open bite occurrences in the selected population. A total of 300 patients reported in the Services Hospital, Lahore (October 2017 to June 2018). All these patients were examined for detailed clinical assessment and history. We also documented the alginate impression models and materials among patients who were dispensed in dental stones. We also measured dental casts in millimetres with the help of Vernier Calipers with a minimum count of (0.01) millimetre. Statistical analysis was made through SPSS software. Every variable was also tabulated for percentage and occurrence.*

*The research participants were in the age bracket of (15 – 30) years and the mean age of the research participants was (16.2 ± 5.2) years. Female population dominated the male population as females were 56.6% and males were 44.4%. There were 14 patients of Anterior open bite (4.6%). Nine patients presented less severe open bite which was under one millimetre (3%); whereas, severe open bite patients were 5 having severity in the range of >1 to 2 millimetres (1.6%).*

**Keywords:** Centric Occlusion, Anterior Open Bite, Vertical, Etiology and Orthodontic.

**Corresponding author:**

Hamna Manzoor,

Dental Section Allied Hospital, Faisalabad.

QR code



Please cite this article in press Hamna Manzoor et al., *A Descriptive Assessment Of Anterior Open Bite Occurrences On A Target Sample: A Cross-Sectional Research.*, Indo Am. J. P. Sci, 2019; 06(03).

**INTRODUCTION:**

Anterior open bite exists as a gap which is acute and vertical between upper incisors and lower incisors along with centric occlusion teeth [1]. Sakuda defined Anterior open bite as a deviation in the vertical association of mandibular and maxillary dental arches which lack in contact especially in the vertical direction between the opposing teeth segments [2]. According to the definition of McSherry, it is a vertical occlusal anomaly which has no vertical upper incisors and lower incisors overlap [3, 4]. The anterior open bite has another explanation that it is a state in which upper incisor crowns of teeth do not overlap incisal third lower incisor teeth crowns in the full occlusion of the mandible. It is also known as vertical deficiency [5].

Anterior open bite is different in different age groups and races as it is very common in Americans than Caucasians with the respective proportion of 6.6% and 2.9% [6]. Various countries have been reported with different proportion such as Kenya (8%), Saudi Arabia (6.6%), Columbia (9%) and Pakistan (94%) [7 – 10]. Research conducted in Bangladesh back in 1994 reported one percent cases of open bite malocclusion; whereas, another reported the same as 4.5% back in 2007 [11]. With the chronological dental development, the occurrence of the anterior open bite is less as it corrects the disorder autonomously in the course of mixed dentition phase.

Multiple factors are involved in the anterior open bite aetiology. These factors have multiple environmental and genetic features which are reflected in the shape of the palate, cleft lips and muscular dystrophy disorders also known as pathologic disorders with associated developmental factors [12, 13]. Other broad categories include sucking, sleep apnea, obstruction of the nasal airway, adenoid facies, long face syndrome, abnormal tongue function and size and vertical growth [15]. Such habits are mostly acquired and it may be due to the environmental and innate skeletal issues.

Due to relapse and compromised aesthetics, the management of anterior open bite malocclusion is very much difficult and complex. It sometimes becomes challenging as well [15]. Its treatment ranges from etiologic habits corrections to

hyperdivergent growth control along with dentoalveolar vertical hyperplasia. Success chances have been increasing with the introduction of technological improvement in the shape of screws and plates [16]. Treatment limitations include the presence of initial growth pattern and various associated etiologic factors, accurate prediction difficulties include treatment response, awareness lack, biological mechanisms awareness, mechanical and periodontal considerations with an increased iatrogenic effect. Individual conditions best judge the malocclusion and also guide professionals for better aesthetic outcomes [17].

The objective of this particular research was to determine the anterior open bite occurrences in the selected population.

**METHODOLOGY:**

We carried out this descriptive, cross-sectional research on a total of 300 patients who reported in the Services Hospital, Lahore (October 2017 to June 2018). All these patients were examined for detailed clinical assessment and history. We also documented the alginate impression models and materials among patients who were dispensed in dental stones. The benefits, purpose and associated risks were briefed to research participants. Every patient gave informed consent before the commencement of the research study. We included undamaged study casts in the age bracket of 15 – 30 years with permanent dentition. Whereas, we did not include previously treated orthodontic, extraction cases, permanent tooth extraction cases, palate and cleft lips patients, craniofacial palate patients and damaged anterior jaws traumatic cases.

The researcher selected twenty cast sets which were reassessed after an initial assessment for both inter and intra-examiner validity and reliability. We also measured dental casts in millimetres with the help of Vernier Calipers with a minimum count of (0.01) millimetre. Statistical analysis was made through SPSS software. Every variable was also tabulated for percentage and occurrence.

**RESULTS:**

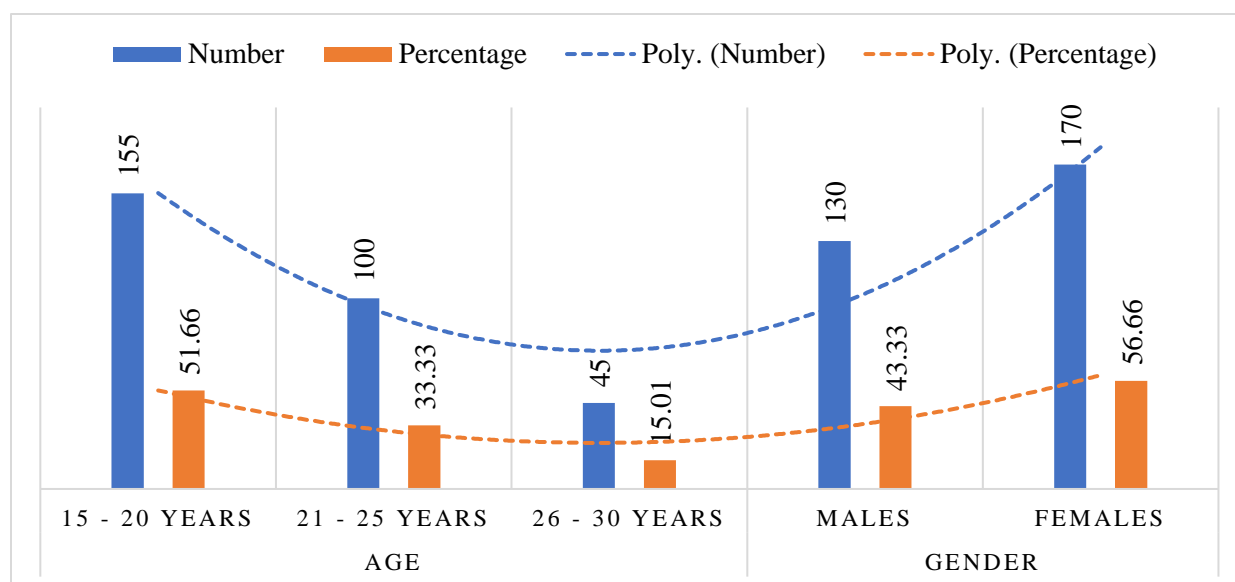
The research participants were in the age bracket of (15 – 30) years and the mean age of the

research participants was ( $16.2 \pm 5.2$ ) years. Female population dominated the male population as females were 56.6% and males were 44.4%. There were 14 patients of Anterior open bite (4.6%). Nine patients presented less

severe open bite which was under one millimetre (3%); whereas, severe open bite patients were 5 having severity in the range of  $>1$  to 2 millimetres (1.6%). Detailed outcomes are given in Table – I & II.

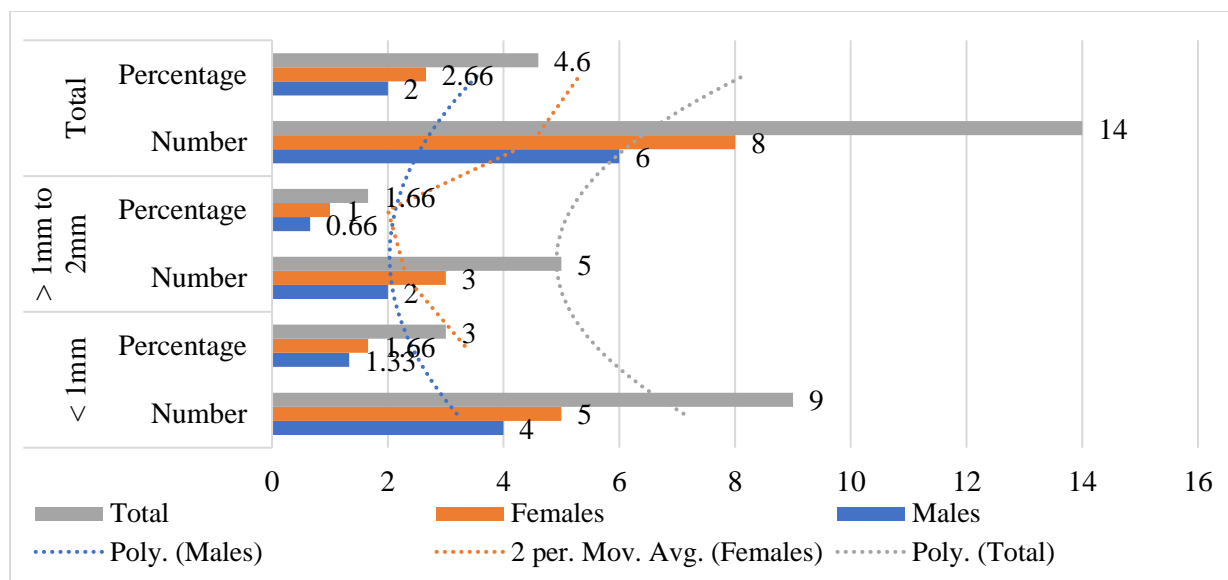
**Table – I:** Age and Gender Distribution

Age (years)		Number	Percentage
Age	15 – 20 Years	155	51.66
	21 – 25 Years	100	33.33
	26 – 30 Years	45	15.01
Gender	Males	130	43.33
	Females	170	56.66



**Table – II:** Anterior open bite status

Anterior Open bite	< 1mm		> 1mm to 2mm		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Males	4	1.33	2	0.66	6	2
Females	5	1.66	3	1	8	2.66
Total	9	3	5	1.66	14	4.6



### DISCUSSION:

From a larger pool, a total of 300 patients were shortlisted for this research. There were only 14 patients of anterior Open bite (4.6%) which is the same as reported by local and international authors [10, 18]. While, few other also reported a different prevalence of 3.5% [13, 19]. Al-Emran and Nagana reported 6.6% and 8% anterior open bite prevalence in the population of KSA and Kenyan population [7, 8]. Female population dominated the males about disease awareness. Few other studies also reported females in large numbers such as Al -Tae and Naeem reported respectively 60% and 69% [10, 21 – 23]. The origin of Open bite can possibly be dental or skeletal. We can make a clinical diagnosis of skeletal open bite with a cephalometric verification. Most of the patients developed overbite instead of large anterior teeth supra-erupt mandibular plane [13]. In the light of the research objective, there was no such demarcation of the dental and skeletal open bite. In the absence of full eruption, the anterior open bite is physical in nature which is managed indigenously by a self-repair process. Other factors having reduced involvement are palate, cleft lip, craniofacial anomalies and trauma [24]. We included the patients of more than fifteen years of age because of full incisors eruption and canines. Few research studies also reflect a higher number of anterior open bite patients. According to Otuyemi, preadolescents and open bite were

respectively 7.3% and 7% [25]. Whereas, Peter reported 8% preadolescent cases of anterior open bite [7]. Winfried and Eva Tausche reported 17.7% anterior open bite cases among preadolescents [26]. Brazilian research reported 46.2% anterior open bite patients in a total of 359 children [27]. The difference lies in the methods and population size.

### CONCLUSION:

The research outcomes conclude that multiple factors are involved in the anterior open bite aetiology. These factors have multiple environmental and genetic features which are reflected in the shape of the palate, cleft lips and muscular dystrophy disorders also known as pathologic disorders with associated developmental factors.

### REFERENCES:

1. Hamdan AM. The relationship between patient, parent, and clinician perceived need and normative orthodontic treatment need. *Eur J method* 2004; 26: 265-71.
2. Al -Tae ZH. Prevalence of Anterior Open bite In Orthodontic patients In Ramadi City. 2010; 8(1): 14-18.
3. Profit WR, Fields HW, Moray LJ. Prevalence of malocclusion and orthodontic treatment need in the United State estimate from the N-Hanes III Survey. *Int J adults orthodx Orthognathic Surg* 1988; 13: 97-106.

4. Otuyemi OD, Abidoye RO. Malocclusion in 12-year-old suburban and rural Nigerian children. *Community Dent Oral Epidemiol* 1993; 10: 375-80.
5. Tausche E, Harzer W. Prevalence of malocclusions in the early mixed dentition and orthodontic treatment need. *European Journal of Orthodontics* 2004 26(3): 237-44.
6. Sidlauskas A, Lopatin K. The prevalence of malocclusion among 7-15-year-old Lithuanian school children. *Medicine (Kaunas)* 2009; 45: 147-52.
7. Ng'ang' an M, Ohio F, Ogard B, Valderhaug J. The prevalence of malocclusion in 13 to 15- year old children in Nairobi, Kenya. *Acta Odontol Scandina* 1996; 54: 126-30.
8. Al-Emran S, With PJ, Boe OE. Prevalence of malocclusion and need for orthodontic treatment in Saudi Arabia. *Community Dent Oral Epidemiol* 1990; 18: 253-55.
9. Thailander B, Pena L, Infante C, Panda S et al. Prevalence of malocclusion and treatment need in children and adolescents in Bogota, Columbia. An epidemiological study related to different stages of dental development. *Br J Orthod* 2001; 23: 153-67.
10. Marwat HJ, Amin B, Khan A. Frequency of Anterior Open bite patients reporting to AFID, Rawalpindi, Pakistan *Oral and Dent J* 2009; 28(1): 71-74.
11. Hossain MZ, Haque S, Yasmin S, et al. Prevalence of Malocclusion and Treatment facilities at Dhaka Dental College and Hospital. *J Oral Health* 1994; 1: 4-6.
12. Ghafari J, Clark RE, Shofer FS, et al: Dental and occlusal characteristics of children with neuromuscular disease. *Am J Orthod Dentofacial Orthop*, 1988; 93: 126-32.
13. Beane RA Jr. Nonsurgical management of the anterior open bite: a review of the options. *Semin Orthod* 1999; 5: 275-83.
14. Kikuchi M, Higurashi N, Miyazaki S, et al. Facial pattern categories of sleep breathing-disordered children using Ricketts analysis. *Psychiatry Clin Neurosci* 2002; 56: 329-30.
15. Ghafari JG, Haddad RV. Open bite: Spectrum of treatment potentials and limitations. *Semin Orthod* 2013; 19: 239-52.
16. Shapiro PA. Stability of open bite treatment. *Am J Orthod Dentofacial Orthop* 2002; 121: 566-68.
17. Klontz HA. The vertical dimension: the high-angle problem. *World J Orthod* 2006; 7: 336-44.
18. Abu Alhaija ES, Al-Khateeb SN, AlNirnri KS. Prevalence of malocclusion in 13-15 years old North Jordanian School. *J common dent health* 2005; 22(4): 260-71.
19. Abdul Jabbar, H. Occlusal feature for a sample of Thi-Qar governorate in student age (12-18) years. MSc. Theses, college of dentistry, Baghdad University.
20. Al-Emran S, With Pg, Boe. OE. Prevalence of malocclusion and need for orthodontic treatment in Saudi Arabia Community. *Dent Oral Epidemiol* 1993; 10: 375-80.
21. Naeem S, Asad S, Hamid MW prevalence of anterior open bite inpatient reporting for orthodontic treatment. *Pakistan oral & Dent J* 2009; 29: 41-44.
22. Ng CST, Wong RWK, Hagg U. Orthodontic treatment of anterior open bite. *Int J Paed Dent* 2008; 18: 78-83.
23. Subtelny JD, Sakuda M. Open bite. *Am J Orthod* 1964; 60: 337-58.
24. McSherry PF. Aetiology and treatment of anterior open bite. *J Irish Dent Assoc* 1996; 42: 20-26.
25. Mizrahi E. A review of anterior open bite. *Br J Orthod* 1978; 5: 21-26.
26. Hak JK, Bevis RR, Waite DE. Apertognathia (open bite) and its surgical management. *Int J Oral Surg* 1984; 13: 278-79.
27. Ackerman, Proffit WR. The characteristics of malocclusion: A modern approach to classification and diagnosis. *Am J Orthod* 1969; 17: 443-54.