

Prevalence of Crossbite Malocclusion among 7-10 Years-Old Children in Yazd, in 2012

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Background and aim: cross bite is an Abnormal relationship between one or more teeth and their corresponding antagonist tooth so that the buccolingual or labiolingual relationship is opposite. Given the high prevalence and impact of these disorders, diagnosis and early treatment of this problem is very important. The aim of this study is to determine the prevalence of anterior and posterior cross bite for girls and boys who were 7-10 years old in Yazd,Iran.

Materials and methods : This cross-sectional study on 400 students aged 7-10 was carried out using clinical examination . Examinations were performed by the dentist and the presence or absence of crossbite and occlusal relationship was evaluated in the mixed dentition.

Results: The prevalence of anterior cross bite is 11% ,12.9% of girls and 9% of boys and prevalence of posterior cross bite was 3.5%, 4.5% in girls and 2.5% in boys .prevalence of anterior cross-bite at age 9 was 11.9% and posterior cross bite at age 10 was 7.1% which are the highest rates reported .In mouth breathing children 35.7 % and 21.4%, had anterior and posterior cross bite respectively.The anterior and posterior cross bite was more in Class II malocclusion than any other malocclusion.Among the cases investigated,mouth breathing and malocclusion have correlation with crossbites.

Conclusion: Given the prevalence of anterior and posterior cross bite , mothers should be aware on the prevention and control of these disorders and also periodic examinations of children To prevent complications in future.

Key words: crossbite , malocclusion , child

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Introduction

According to the American Association of Orthodontists, crossbite is an abnormal relationship of one or more teeth with its corresponding antagonist tooth so that Buccolingual and labiolingual relationship of teeth is opposite.(1) Crossbite can cause undesirable side effects if left untreated. Some research resources also refer to it as dental crossbite if the problem is caused by the Palatal Malposition of maxilla together with Labioversion of its corresponding antagonist tooth in the lower jaw.(2-4)

crossbite has been investigated and classified from various aspects. Cross bite can be classified in anterior or posterior and bilateral or unilateral. Anterior Cross-bite, a dental abnormality in anterior-posterior plane, is one of the most important causes of human aesthetic problems. Cross bite can lead to functional impairment during the early stages of tooth development. In the most cases, anterior crossbite occurs under the influence of environmental situations and needs to be treated.(5, 6) However, it is likely that anterior cross-bite which had been treated in the primary dentition, return again in the permanent dentition. Many studies have reported that anterior cross-bite may recover spontaneously without any treatment. posterior cross bite is a Lateral disorder of teeth that might be seen in the forms of buccal and lingual.(5) During child development, Posterior cross bite also can be classified in three different forms of skeletal, dental and functional.(7)

Several factors can cause anterior cross bite involving one or more teeth. The most common factor is the lack of space among permanent incisors. Other factors are: Congenital growing pattern of upper dental arch, relocation of primary and permanent teeth buds because of an impact to the primary teeth and permanent teeth after traumatic dislocation leading to loosening of them.(8)

crossbites are a form of malocclusion that are relatively common in the early stages of child development.(9) The prevalence of anterior cross bite is different between various ethnic groups. The total prevalence of

anterior cross bite has been reported to be between 4 and 5 percent. The anterior cross bite prevalence among Americans and the Japanese were 3% and 10%, respectively. The total prevalence of posterior cross bite has been reported to be 6 to 16%. Specifically, the prevalence of posterior cross bite in Caucasians is more than Asians and Africans.(2, 8, 10)

The aims of this study was to investigate the prevalence of anterior and posterior cross bite for 10-7 year old boys and girls in yazd,Iran and to determine the required treatments and health polices for the prevention and control of this problem.

Material & Methods

This cross sectional study was conducted using observation and clinical examination. The population was 7-10 years old boys and girls in primary school students of Yazd,Iran in 1393 .

According to previous studies, the sample size of 400 people, at least were estimated .Inclusion criteria were 7-10 years old children at the time of examination. Exclusion criteria included a history of previous orthodontic treatment , dental trauma, craniofacial abnormalities and also all cases of severe caries and extraction of the teeth that crossbite was to hard to detection. To examine samples ; dental mirror, flashlight and tongue blade was used.

Clinical examinations were performed by a dentist. To recognize the crossbite, the child closed their mouth in centric occlusion. any Abnormal relationship between one or more teeth and their corresponding antagonist teeth that the buccolingual or labiolingual relationship exchanged was recorded as anterior and posterior cross bite.early Mixed dentition occlusal relationships of teeth were on one of the Class I, Class II, Class III and End-to-End .

spss version 22 was used to analyse the data , descriptive and chi-square test applied where appropriate and the significance was set as 5%.

Results

The sample population consisted of 400 children, 199 boys and 201 girls . 6.5% of children were 7 years old , 29.8% were 8 years, 8/35% were 9 years old and 28% were 10 years old. prevalence of anterior cross bite was 11 % and posterior cross bite was 3.5 % . 12.9% of girls and 9% of boys respectively have anterior cross bite and 5.4% of girls and 2.5% of boys have posterior cross bite respectively.(Figure 1) Chi-square analysis revealed no significant correlation between gender and the prevalence of cross bite. ($P= 0.235$)

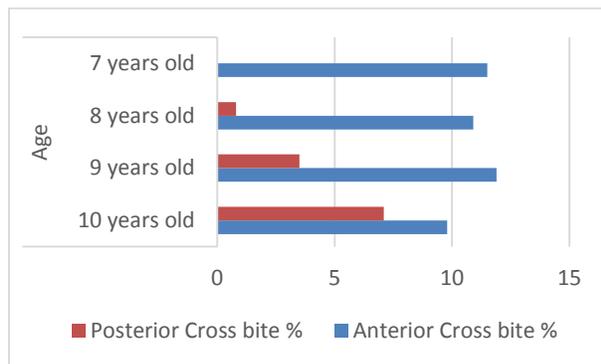


Figure 1. The prevalence of anterior and posterior cross bite on the basis of age

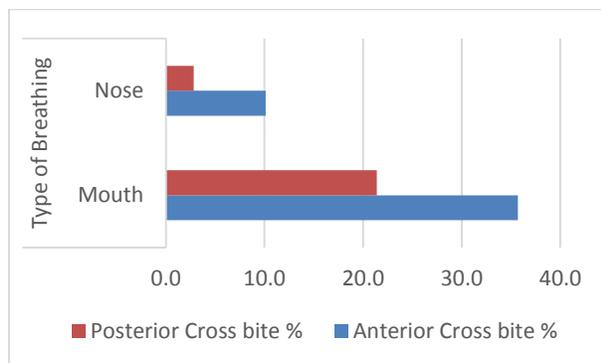


Figure 2. The prevalence of anterior and posterior cross bite on the type of breathing

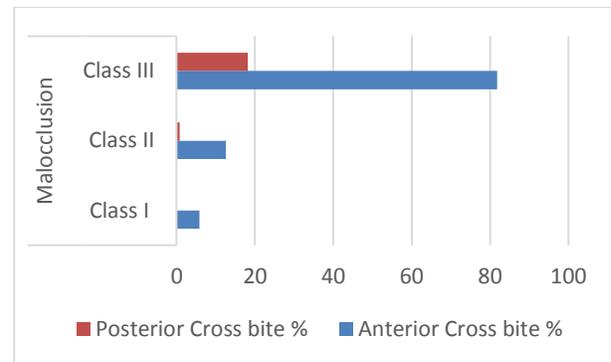


Figure 3. The prevalence of anterior and posterior cross bite on the malocclusion types

Among mouth breathing children, 35.7 % and 21.4 %, had anterior and posterior cross bite respectively, in nose breathing children 10.1 and 2.8 %, had anterior and posterior cross bite respectively. (Figure 2) A significant correlation between the prevalence of cross bite and mouth breathing was found. ($P=0.001$)

In children with Class I malocclusion, 94.2 % had no cross bite and only 5.8 % had anterior cross bite .In children with class II malocclusion 79.4 % had no cross bite And the prevalence of anterior and posterior cross bite are 12.6 % and 0.8 % respectively. In children with Class III malocclusion, 81.8 % had anterior cross bite and 18.2% had posterior cross bite . (Figure 3)

The anterior and posterior cross bite in Class II malocclusion malocclusion is higher than any other malocclusion. Between prevalence of cross bite and classification of malocclusion was significant correlation. ($P=0.001$) (Table 1)

Table. Prevalence of anterior and posterior cross bite by age, sex, type of breathing and malocclusion classification

p-value chi-square	Crossbite						Variable label	Demographic variables
	Absent		Posterior		Anterior			
	percent	numbers	percent	numbers	percent	numbers		
0.235	88.5	23	0	0	11.5	3	7-Years	Age
	88.2	105	0.8	1	10.9	13	8-Years	
	84.6	121	3.5	5	11.9	17	9-Years	
	83	93	7.1	8	9.8	11	10-Years	
0.237	88.4	176	2.5	5	9	18	Female	Gender
	82.6	166	4.5	9	12.9	26	Male	
0.001	42.9	6	21.4	3	35.7	5	Mouth	Type of Breathing
	87	336	2.8	11	10.1	39	Nose	
0.001	94.2	179	0	0	5.8	11	Class I	Anteriorposterior Malocclusion
	79.4	158	0.8	16	12.6	25	II Class	
	0	0	18.2	2	81.8	9	III Class	

Discussion

in this study, The prevalence of anterior crossbite for 10-7 year students was 11% and The prevalence of posterior crossbite was 3.5%. Demir et al showed the prevalence of anterior and posterior cross bite for Turkish subjects to be 5.6% and 8.9%, respectively(11), which reveals more posterior cross bites in comparison to our study. Based on Carvalho's study, the prevalence of posterior crossbite in 3-5 year old children was 10.1%.(12) It is concluded that these differences result from different age and race groups being studied. Tausche et al determined the anterior and posterior cross among 6-10 year old children to be 10.42% and 3.2%, respectively(13), that are relatively same as the findings of the present study, probably due to the close similarity of the age groups. The prevalence of anterior and posterior cross bite for older people is 33% and 31%, respectively. It is shown that early diagnosis and treatment in childhood can reduce its harmful effects in adulthood.

In this study similar to Perinetti et al study (14), the prevalence of anterior and posterior cross bite, was

slightly higher in boys, but there was no significant relationship between sexuality and cross bite. Based on Nakhjavani and coworkers study, also there was no significant relationship between sexuality and cross bite. (15)

In the present study, the prevalence of anterior and posterior cross bite for children with mouth breathing was 35.7 and 21.4 percent respectively and for children with nose breathing was 8.2% and 10.1% respectively. Significant relationship between the prevalence of crossbite and mouth breathing was observed. Based on Souki study, posterior cross bite was higher in children with mouth breathing.(16) It can be concluded that mouth breathing is probably one of the predisposing risk factors of anterior and posterior cross bite. The lack of support of teeth from the tongue side and cheek pressure could be the reason for the occurrence of posterior cross bite in patients with mouth breathing. There is no Specific cause-effect relationship between higher prevalence of anterior cross bite in patients with mouth breathing. One can only point out that perhaps due to the smaller maxilla in patients with class III

malocclusion, nasal airway can also be small and This can be a justification for mouth breathing in patients with Class III malocclusion.

In this work anterior and posterior crossbite for class II malocclusions was higher than other classes of malocclusion. Based on Ritter study, anterior cross bite was observed for class I malocclusion.(17)

Conclusion

Due to the high prevalence of anterior and posterior cross bite, mothers should be aware of methods of preventing and controlling these disorders and periodic examinations of children. by reducing Occlusion interference or correcting the position of one or more teeth and removing them from crossbite we can prevent from socio-emotional and functional abnormalities and complications of this malocclusions.

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