

Assessment of Parafunctional Oral Habits among a Sample of Saudi Dental Patients

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Abstract. The aim of this study is to assess the prevalence of parafunctional oral habits including breathing disorder, bruxism, thumb-sucking, clenching and some of the related factors among a group of Saudi dental patients ranging from 6 to 16 years of age. The sample of this study comprised 1032 Saudi children (712 boys and 320 girls) collected from the screening clinic, Faculty of Dentistry, King Abdulaziz University. Standardized questionnaire form, information about the presence or absence of different parafunctional oral habits and the participant's oral health knowledge was obtained. Age, sex and number of siblings were collected. Descriptive statistics, *t* test and Chi square test were used as appropriate. The prevalence of breathing disorders, bruxism, thumb-sucking and clenching habits were 20.2%, 30.2%, 16.7% and 13.6%, respectively. Bruxism was more prevalent in boys (33.1%) than girls (23.7%), while girls had a significantly higher prevalence of thumb-sucking and clenching ($p=0.001$). The number of siblings had a significant effect on bruxism and thumb-sucking ($p=0.04$), but not on breathing disorder ($p=0.44$) or clenching ($p=0.22$). Oral health knowledge had insignificant effect on breathing disorders, bruxism, thumb-sucking and clenching ($p=0.88, 0.71, 0.28$ and 0.31 , respectively).

Keywords: Prevalence, Oral habit, Saudi children.

Introduction

Early diagnosis of parafunctional oral habits may allow both dentists and parents to discourage these habits to avoid negative consequences. Since

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1870, literature has pointed out the associations between parafunctional oral habits and occlusal abnormalities^[1]. Oral habits include, among others, breathing disorder, bruxism, thumb-sucking and clenching. These activities are common and usually affect the structure of the mouth if not detected early. Furthermore, oral habits may result in the most frustrating problems for the dentist^[2-4].

The American Academy of Pediatric Dentistry (AAPD)^[5] defined bruxism as the habitual, nonfunctional, forceful contact between tooth surfaces which can occur while awake or asleep. Okeson^[6] stated that: “bruxism is a multifactorial entity that needs the conjunction of two or more factors for it to be triggered”. Weideman *et al.*^[7] reported that complications include: dental attrition, headaches, temporomandibular joint dysfunction, and soreness of the masticatory muscles. Bruxism management ranges from patient/parent education, occlusal splints, and psychological techniques to medications^[8,9]. Many children stop the habit during the preschool years, but some continue into the teenage or adult years.

Even if there were no ill effects on occlusion, thumb-sucking is not socially acceptable and should be discouraged^[10]. Moorrees^[11] believes that the effect of the thumb-sucking habit on the maxillary and mandibular bones and the dental arches, depends on several factors. These factors include the frequency with which the habit is practiced, the duration of the habit, the osteogenic development, and the child’s state of health^[12,13].

Mouth breathing may be associated with anterior open bite, abnormal speech, and anterior protrusion of the maxillary incisors. Management may consist of simple habit control, myofunctional therapy, habit breaking appliances, orthodontics, and possibly surgery^[14]. Clenching is the nonfunctional forceful intermittent application of the mandibular teeth against the maxillary teeth^[15]. The AAPD recognizes that the well-being of an infant, child, or adolescent can be affected by oral habits and encourages health practitioners to take an individualized approach in the management of these habits. In some patients dentoalveolar-skeletal deformation may be associated with oral habits, and the amount of deformation depends on the frequency, duration, direction and intensity of the habit^[5].

Linn^[16] assessed oral health knowledge of over 2000 tenth grade students. He concluded that students lacked knowledge about preventive practice, particularly periodontal diseases, and boys were less knowledgeable than girls. Woolfolk *et al.*^[17] assessed dental health knowledge and sources of oral health information in elementary school students, and they found that family is the main source of oral health information; while Hamilton and Coulby^[18] found that the best sources of oral health information were from dentists and schools. In addition, Al-Al-Huussiani *et al.*^[19] and Alansari and Honkala^[20] found that females had better awareness than males and they were more anxious about dental health issues. This was also noticed by Almas *et al.*^[21] who studied school teachers' oral health knowledge and found that female teachers had better oral health knowledge than male teachers.

Until now, there has been no conclusive data regarding the relationship of sex or number of siblings on the prevalence of abnormal oral habits. Also, in the literature there has been no apparent information about whether good oral health knowledge of the children could modify their behavior, thereby reducing the incidence of parafunctional oral habits.

The aim of this study was to assess the prevalence of parafunctional oral habits including breathing disorder, bruxism, thumb-sucking, clenching and related factors among a group of Saudi dental patients ranging from 6 to 16 years of age living in Jeddah, Saudi Arabia.

Materials and Methods

Study Design

This work was designed as a cross-sectional study to assess the prevalence of parafunctional oral habits in relation to sex, number of siblings and oral health knowledge among a group of Saudi dental patients ranging from 6 to 16 years old.

Study Setting

Data were collected by clinical examination of the participants in the screening clinic, Faculty of Dentistry, King Abdulaziz University (KAU)

Jeddah and by means of self-administered questionnaires. These questionnaires were evaluated for optimal construction and validity of variables.

Sample Selection

The participants were consecutively selected from the screening clinic, Faculty of Dentistry, KAU. The total sample comprised 1032 Saudi children and adolescents (712 males and 320 females), 6 to 16 years of age living in the city of Jeddah. Questionnaires were completed either by the subjects themselves or their parents. Children/adolescents with mental retardation or severe chronic diseases were excluded because their physical or cognitive impairment might affect the oral health knowledge or presence of oral habits. The Ethical Committee at the Faculty of Dentistry, KAU, approved the study.

Interview


Interviews with the participants and/or parents were made in a neutral setting in a dental office. The interview was performed person-to-person to minimize the problems of understanding. The interview covered various background variables using a standardized questionnaire form.

Questionnaire

Participants and/or parents completed the questionnaire (Fig. 1) in which information about nationality, age, sex, and number of siblings was collected. Also, diverse questions about the presence or absence of different parafunctional oral habits and questions regarding the participant's oral health knowledge and regular dental checkup were included.

For dental knowledge assessment, each patient was asked questions to determine his/her dental and oral health information level. Each participant was given a score equal to the sum of corrected answers. The mean knowledge score was calculated as the sum of scores of all children/number of children ($\bar{x} = \frac{\sum X}{n}$).

Pre-testing of the questionnaire on a group of dental patients of the same age was conducted for the adjustment of words and phrasing of questions. The questionnaires were administered in Arabic language and were distributed, completed and collected at the same setting.



الاسم :
 الجنسية :
 السن :
 النوع :
 عدد الأخوة :

سعودي غير سعودي
 ذكر أنثى

هل تعاني من:
 التنفس من الفم
 احتكاك الأسنان السفلي والعلوي
 مص الأصبع
 الضغط على الأسنان

لا نعم

والآن نرجو منك عزيزي الإجابة على هذه الأسئلة بدقة وذلك باختيار إجابة واحدة فقط:

١. الطريقة الصحيحة للتنفس هي التنفس من:
 الفم الأنف لا أعلم

٢. إحتكاك الأسنان ببعضها البعض يؤدي إلى:
 ضعفها وتآكلها تسوس الأسنان لا أعلم

٣. عادة مص الإصبع ينتج عنها :
 تشوهات بالفم التهاب باللثة لا أعلم

٤. البلاك هو :
 طبقة من البكتيريا تتركم على سطح الأسنان طبقة تقوي الأسنان لا أعلم

٥. تسوس الأسنان عبارة عن:
 تغير لون الأسنان نخر الأسنان لا أعلم

٦. طريقة الحفاظ على نظافة الأسنان تكون عن طريق:
 الفرشاة والمعجون غسل الفم بالماء لا أعلم

Clinical examination:
 Child suffering from:
 Mouth breathing
 Clenching
 Bruxism
 Thumb sucking

Fig. 1. Sample of the questionnaire.

Examiner Reliability

Inter-examiner calibration was done by training the examiners together before the start of the study to ensure uniform understanding of the questions and application of the diagnostic criteria.

Statistical Analysis

Data were collected, presented and statistically analyzed using the Statistical Package System (SPSS) version 13. Independent sample “student’s” *t* test and Chi square test were used accordingly.

Results

The results showed that the percentage of total prevalence of oral habits for mouth breathing, bruxism, thumb-sucking and clenching was 20.2%, 30.2%, 16.7%, and 13.6% of the study sample, respectively (Table 1). In addition, the percentages of boys affected by breathing disorder, bruxism, thumb-sucking and clenching were 19%, 33.1%, 10.6% and 9.5%, respectively. Whereas, girls with breathing disorder, bruxism, thumb-sucking, and clenching account for 22.5%, 23.7% 30% and 22.5%, respectively (Table 2).

Table 1. Frequency distribution of oral habits among the examined sample.

Habit	N = (1032)	Percentage (%)
Breathing disorder	208	20.2
Bruxism	312	30.2
Thumb-sucking	172	16.7
Clenching	140	13.6

Boys had a significantly higher percentage of bruxism than girls ($\chi^2=9.24$, $p=0.002$). On the other hand, thumb-sucking and clenching were more prevalent in girls than boys and the differences were statistically significant ($\chi^2=59.3$ and 31.2 , respectively; $p=0.001$). Meanwhile, the difference of the distribution of breathing disorder between boys and girls did not reach the level of statistical significance ($\chi^2=1.58$, $p=0.200$).

(Table 2). Also the results showed that children affected with bruxism and thumb-sucking had a significantly higher mean number of siblings than the rest of the children (5.46 and 5.3 vs. 4.2 and 4.6, respectively; $p=0.040$). On the other hand, the mean number of siblings in children affected by breathing disorders and clenching were 5 and 5.6, respectively compared to 5.3 and 5.1 of unaffected children. The difference was not significant ($p=0.44$ and 0.22 , respectively) (Table 3).

Table 2. Parafunctional oral habits and its relation to gender.

Habit	Males (712)		Females (320)		X ²	P-value
	Affected children	Unaffected children	Affected children	Unaffected children		
Breathing disorders	136 (19%)	576 (81%)	72 (22.5%)	248 (77.5%)	1.58	0.20
Bruxism	236 (33.1%)	476 (66.9%)	76 (23.7%)	244 (76.3%)	9.24	0.002*
Thumb-sucking	76 (10.6%)	636 (89.4%)	96 (30%)	224 (70%)	59.30	0.001*
Clenching	68 (9.5%)	640 (90.5%)	72 (22.5%)	248 (77.5%)	31.195	0.001*

*Significant at 5% level

Table 3. The relationship between parafunctional oral habits and number of siblings.

Habit	Number of siblings (Mean \pm SD)		t	p
	Affected children	Unaffected children		
Breathing disorders	5.01 \pm 2.2	5.33 \pm 2.3	-0.76	0.44
Bruxism	5.46 \pm 2.64	4.25 \pm 2.1	2.82	0.04*
Thumb-sucking	5.36 \pm 2.7	4.65 \pm 1.7	2.01	0.04*
Clenching	5.61 \pm 3.2	5.11 \pm 2.2	1.22	0.22

*Significant at 5% level

The effect of knowledge on oral habit occurrence among the examined children was demonstrated in Table 4. As shown, independent sample t-test revealed that knowledge score did not significantly differ between children exhibiting and not exhibiting breathing disorders,

bruxism, thumb-sucking or clenching. P-values were 0.80, 0.71, 0.28 and 0.31, respectively.

Table 4. Dental knowledge and its relationship to parafunctional oral habits.

Habit	Knowledge score (Mean \pm SD)		t	p
	Affected children	Unaffected children		
Breathing Disorders	4.30 \pm 0.98	4.27 \pm 0.90	0.25	0.80
Bruxism	4.32 \pm 0.80	4.26 \pm 0.93	0.36	0.71
Thumb-sucking	4.22 \pm 0.90	4.35 \pm 0.93	-1.08	0.28
Clenching	4.19 \pm 0.89	4.31 \pm 0.92	-1.00	0.31

Discussion

In this study, the attempt was made to examine subjects representing the youth population of the city of Jeddah in the Kingdom of Saudi Arabia. Questionnaires used in this study were prepared and evaluated to fulfill the purpose of the study. In addition to the questionnaires, clinical examination of the children was performed to confirm the presence of parafunctional oral habits and to reduce the tendency to give more socially desirable answers such as denying habits.

In the present study the prevalence of mouth breathing, clenching, bruxism and thumb-sucking were 20%, 30%, 16.7%, and 13.6%, respectively. Contrary to these findings was the observation by Shetty and Munshi, 1998^[22] and Guaba *et al.*, 1998^[23] who observed that only 3% of children aged 6-15 years old demonstrated oral habits. In addition, Bosnjak *et al.*, 2004^[24] reported that 33.3% of the screened children in the mixed dentition stage exhibited oral habits. On the other hand, Abou-Atme *et al.*^[25] reported higher prevalence value of bruxism (33.9%) compared to our study. The reasons for these inconsistent values of the previous reports might be attributed to different methods used for assessment of oral habits, different populations examined, ages and socio-economic status of the population involved.

In the present study, bruxism showed a statistically significant sex difference with higher prevalence in boys ($p=0.002$). This was found to be comparable to the finding of Shetty and Munshi,^[22] Jose^[26] and Yassaei *et al.*^[27] who all they found that the prevalence rate of bruxism

was higher in boys than in girls. However, Abou-Atme *et al.*^[25], and Glaros^[28] found that the prevalence of bruxism in both genders were equal.

On the other hand, thumb-sucking and clenching were more prevalent in girls than boys and the difference was statistically significant ($p < 0.001$). Meanwhile, the difference of the distribution of breathing disorder between boys and girls was not significant. The different populations examined may also justify these differences in the prevalence of oral habits.

It has been established that internal worries and lack of deep affections might increase the risk of development of abnormal oral habits^[29,30]. Therefore, maternal deprivation, commonly seen in families with a large number of children could explain the significant increase of bruxism and thumb-sucking in children who had a higher mean number of siblings. Also, this was consistent with the increase of abnormal oral habits in children suffering from abnormal psychic stress, such as those whose parents were war prisoners^[27]. This was in contrast with finding of Farsi and Salama who reported, “sucking habit was only related to parents’ education and the child feeding methods without significant effect of gender, birth rank, family income, physical or psychological factors”^[31].

Nevertheless, the results of the present study revealed that oral health knowledge was not a significant predictor of the occurrence of breathing disorders, bruxism, thumb-sucking or clenching. This could be attributed to the fact that adequate knowledge of oral health alone may not be enough to overcome the threshold of behavioral modification and prevention of harmful oral habits as suggested by Ettinger^[32]. Furthermore, the high prevalence of parafunctional oral habits observed in this work emphasized the importance of regular dental visits of the children for early recognition and treatment of these habits that could affect the dentoalveolar structures of the children if not detected early.

Conclusion

In view of the preceding results, it can be concluded that:

1. The prevalence of breathing disorders, bruxism, thumb-sucking and clenching were 20.2%, 30.2%, 16.7% and 13.6%, respectively.
2. Bruxism was more prevalent in boys, while girls had a significantly higher prevalence of breathing disorder and thumb-sucking than boys.
3. The number of siblings had a significant effect on bruxism and thumb-sucking but had no significant effect on clenching or breathing disorder.
4. Dental knowledge did not significantly affect breathing disorders, bruxism, thumb-sucking or clenching.

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تقييم العادات الفموية الضارة في عينة من مرضى الأسنان السعوديين

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المستخلص. الاكتشاف المبكر لحدوث العادات الفموية الضارة عند الأطفال هو ذو أهمية عالية، وذلك لمنع اعوجاج الأسنان، حيث أن هذه العادات قد تكون سببا لحدوثها. الهدف من البحث: هو قياس نسبة حدوث العادات الفموية السيئة والعوامل المحيطة بها عند الأطفال السعوديين من سن السادسة إلى السادسة عشرة. طريقة البحث: تم تصميم هذه الدراسة لمعرفة نسبة الإصابة بهذه العادات بين الجنسين، ولقياس مدى تأثير عدد الأطفال في الأسرة، والمعلومات الصحية للفم والأسنان لحدوث هذه العادات الفموية الضارة بين الطلبة والطالبات السعوديين. تم فحص جميع الزائرين للعيادات الخارجية في كلية طب الأسنان بجامعة الملك عبدالعزيز وذلك لمعرفة ملائمتهم للمواصفات المطلوبة، وتم تعبئة الاستبيانات من قبل الزائرين أو ذويهم. نتائج البحث: أظهرت أن نسبة حدوث التنفس الفموي وحك الأسنان السفلية بالعلوية ومص الإصبع والضغط على الأسنان كانت على التوالي ١٣,٦٪، ١٦,٧٪، ٣٠,٢٪، ٢٠,٢٪. وأوضحت الدراسة أيضاً أن عادة حك الأسنان السفلية بالعلوية كانت نسبتها أعلى عند الذكور، وعادة التنفس الفموي ومص الإصبع والضغط على الأسنان أكثر تكراراً عند

الإناث. كذلك أوضح البحث أن عدد الإخوة له تأثير دال على تكرار حدوث عادتي حك الأسنان السفلية بالعلوية ومص الإصبع. ولم يتضح من الدراسة وجود علاقة إحصائية دالة للمعلومات الصحية للعناية بالفم والأسنان للأطفال السعوديين، لتكرار حدوث هذه العادات الفموية السيئة عندهم.

