

Prevalence of Parafunctional Oral Habits in 7 to 15 Years Old Schoolchildren in Saudi Arabia

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Abstract

Objectives: To determine the prevalence of parafunctional oral habits in school children in Saudi Arabia.

Methods: A cross-sectional study conducted in October 2015. Sample included 507 children ranged in age from 7 to 15 years old who were attending private/government schools in Riyadh, Saudi Arabia using systematic random sampling. Data was recorded by anamnestic questionnaire. Clinical examination was carried out by 6 examiners following WHO guidelines to detect the presence and the type of parafunctional oral habits. Questionnaire included personal data and presence or absence of oral habits like tongue thrust, mouth breathing, and thumb sucking. All examiners took part in a course on the methods of "Functional Analysis" breathing and sucking habits. The interview and examination of a single study subject took 3 to 4 min. Prevalence rates of different oral habits studied were calculated. Chi-square test was done to compare the prevalence of oral habits among different sexes with a cutoff point of ($p < 0.05$).

Results: Sample consisted of 190 (37.5%) males and 317 (62.5%) females. Tongue thrusting showed out to be the most prevalent oral habit (25.0%) followed by thumb sucking (21.1%). However, mouth breathing (12.0%) was found to be the least prevalent oral habit. Thumb sucking and mouth breathing was more prevalent in males while tongue thrusting was more prevalent in females.

Conclusion: There is an increased prevalence of oral habits among schoolchildren in Saudi Arabia.

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Introduction

It is well established in the literature that parafunctional habits can affect the occlusion increasing the need for orthodontic treatment [1-3]. Moreover, parafunctional habits are reported to be associated with Temporomandibular Disorders (TMD), Burning Mouth Syndrome (BMS), Sleep Bruxism (SB), abfraction, increased overjet decrease in dental arch depth and width, and increased tendency for increased lower anterior facial height [4-11].

The prevalence of oral habits varied among different societies [3,12-15]. The extent of these effects varies from case to case, depending on a wide range of variables including the actual habit employed, the duration and intensity of the habit, and the inherent dental and skeletal relationship. Some of the negative sequelae associated with prolonged habits like thumb sucking

and tongue thrusting include a higher incidence of anterior open bite, maxillary incisor protrusion, class II canine relationship, distal step molar relationship, posterior cross bites, and lip incompetence [16].

Burlington Growth study, which comprised approximately 90% of the pediatric population of Burlington, Ontario, showed that, there was a significant association between the prevalence of class II malocclusion and persisting digit sucking in the different age groups. As the duration of the habit increased, the probability of a child developing a class II malocclusion increased. If the habit was stopped early (before 6 years), the effects on occlusion were often transitory [17]. A study among 832 schoolchildren aged 6-12 years old in Karad district, India, has shown the prevalence of different habits as follows: bruxism (17.3%), bottle feeding (10.1%), thumb sucking (8.7%), nail biting (5.8%), tongue thrusting (4.9%) and mouth breathing (4.3%) [12]. Another study

included 2707 schoolchildren aged 7-15 years old from Tirana, Albania has demonstrated the prevalence of oral habits as follows: finger sucking (11.4%), pacifier use (31.8%) and mouth breathing (24.8%) [13]. The prevalence of oral habits among 1385 Brazilian schoolchildren aged 5-6 years old has been reported as follows: pacifier use (43.4%), bottle sucking (84.8%) and finger sucking (17.2%) [14]. Shetty et al. on a study on 6 to 11 year old children in Rajnandgaon city, Chhattisgarh, India has found that the prevalence of tongue thrusting was (17.4%), mouth breathing (13%), and finger sucking (1.7%) [18]. Another study by Jahanbin et al., reported the prevalence of finger sucking on 7-year-old girls in Mashhad, Islamic Republic of Iran to be (10.6%) [19].

In a population of Saudi schoolchildren aged 3-5 years old in Riyadh, Saudi Arabia, the prevalence of sucking habits has been found to be (48.36%) [3]. In a sample of 1032 Saudi schoolchildren and adolescents in Jeddah, Saudi Arabia, it has been reported that the prevalence of breathing problems is (20.2%), bruxism (30.2%), thumb sucking (16.7%) and clenching (13.6%) [15].

The prevalence of oral habits in schoolchildren has not been clearly documented in different population groups across Saudi Arabia. Hence, the aim of this study is to determine the prevalence of oral habits among 7 to 15 years old school children in Saudi Arabia.

Materials and Methods

Ethical approval was obtained from the institutional review board. This cross-sectional study targeted population between 7 and 15 years of age who were attending private/government schools in Riyadh, Saudi Arabia in October 2015. Inclusion criteria included, Saudi children with no systematic diseases or syndromes affecting the maxillofacial area. The total sample included 507 children, both males and females. Study subjects were selected by systematic random sampling. The scheduled activities for recording the data was started after signing informed consent by parents or guardians. Subjects reserved all their rights as stated in the Declaration of Helsinki. The data was recorded by anamnestic questionnaire and clinical examination without radiographs. It was carried out by 6 examiners following WHO guidelines [20].

The detection of the presence and the type of parafunctional oral habit was done in 2 stages: questionnaire and clinical examination. Questionnaire included, personal data, only the presence or absence of oral habits including tongue thrust, mouth breathing and thumb sucking.

Before starting any clinical examination, all the examiners took part in a course on the methods of "Functional Analysis" for breathing, nasal obstruction, sucking habits and biting habits [21,22]. This ensured uniform understanding of clinical methods and application of diagnostic criteria. The intraoral phase of clinical examination was done by using latex gloves, mouth mirrors. A survey proforma was completed by the parents/guardians about the child's condition related with the manifestations of these habits. The interview and examination of a single study subject took 3 to 4 min. Prevalence rates of different oral habits studied were calculated.

The English questionnaire was translated to Arabic and again retranslated back to English by a bilingual translator. Comparison

was done between the original and the retranslated English questionnaire for adjustments of words and phrasing of questions.

Statistical Analysis

Chi-square test of Pearson to determine the difference in the prevalence rate of parafunctional oral habits among different sexes ($p < 0.05$). IBM SPSS version 24 statistical package was used (IBM SPSS Statistics for Mac, Version 24.0. Armonk, NY: IBM Corp.).

Results

Out of the total sample of 507, 190 (37.5%) were males and 317 (62.5%) were females. **Table 1** shows the distribution of the sample according to age and gender. **Figure 1** shows the prevalence of parafunctional oral habits in the total sample that is representative of the entire schoolchildren in Riyadh, Saudi Arabia in age group (7-15) years old. Out of the 3, tongue thrusting (25.0%) showed out to be the most prevalent oral habit followed by thumb sucking (21.1%). However, mouth breathing (12.0%) was found to be the least prevalent adverse oral habit (**Table 2 and Figure 1**).

Thumb sucking and mouth breathing was more prevalent in males but tongue thrusting is more prevalent in females as represented in **Figure 2**. **Table 3** shows chi-square statistics of parafunctional oral habits between males and females. No statistically significant difference between males and females in tongue thrust ($p = 0.447$). Thumb sucking and mouth breathing both were more prevalent among males compared to females ($p = 0.026$) and ($p = 0.002$), respectively.

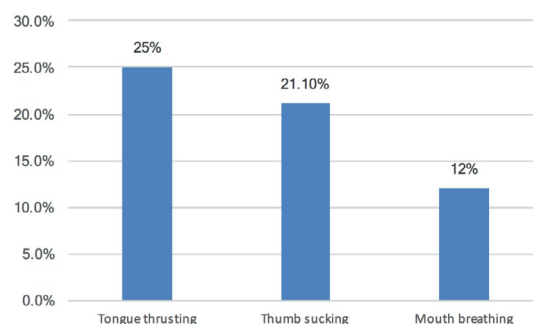


Figure 1 Distribution of habits in the sample.

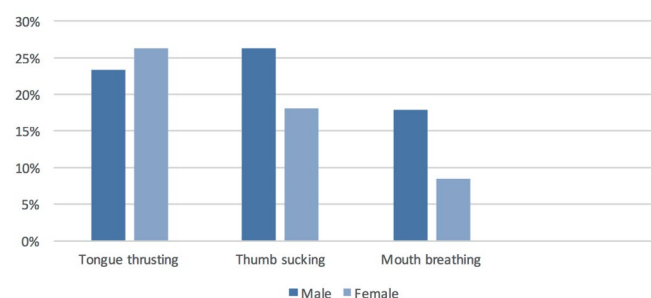


Figure 2 Prevalence of para-functional oral habits in males and females.

Table 1 Composition sample (n=507) by age and gender.

Age	Total Sample			Composition Sample by Age Males+Females (%)	Compositions Sample by Gender	
	Males	Females	Males+Females		Males (%)	Females (%)
	n	n	n			
7	7	16	23	4.5	30.4	69.6
8	7	67	74	14.6	9.5	90.5
9	21	93	114	22.5	18.4	81.6
10	29	39	68	13.4	42.6	57.4
11	39	40	79	15.6	49.4	50.6
12	67	51	118	23.3	56.8	43.2
13	18	4	22	4.3	81.8	18.2
14	0	6	6	1.2	0	100
15	2	1	3	0.6	66.7	33.3
	190	317	507	100	37.5	62.5

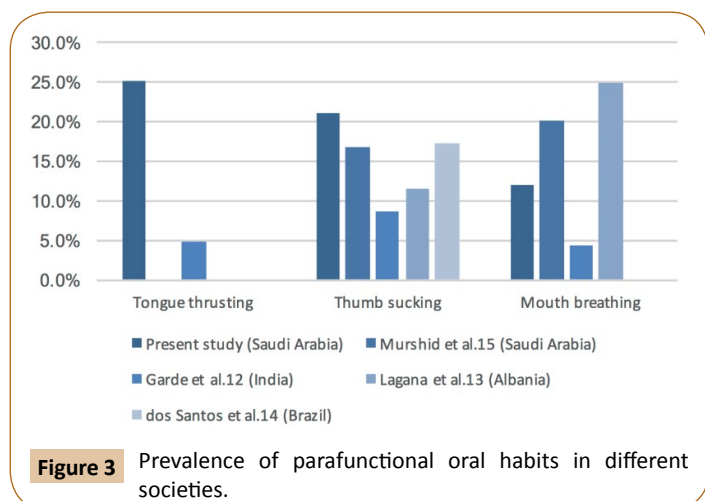
Table 2 Prevalence of oral habits in total population.

Habit	Tongue Thrusting	Thumb Sucking	Mouth Breathing
n	127	107	61
Percentage	25.0%	21.1%	12.0%

Table 3 Chi-square statistics comparing males and females for each para-functional habit.

Habit	Gender	Count	Percentage	P-Value
Tongue thrusting	M	44	23.20%	0.477
	F	83	26.20%	
Thumb sucking	M	50	26.30%	0.026*
	F	57	18.00%	
Mouth breathing	M	34	17.90%	0.002**
	F	27	8.50%	

M: Male; F: Female; *p<0.05; **p<0.01



habits and to reduce the tendency to give more socially desirable answers such as denying habits.

The findings of this study are in disagreement with the observations by Guaba et al. who found only 3% of children in the age range of 6-15 years to demonstrate a parafunctional habit as compared to our study that shows the prevalence of parafunctional habits ranged 12.0% to 25.0% in almost the same age group [23]. In the present study, the prevalence of tongue thrusting and thumb sucking were 25.0%, 21.1% respectively, followed by mouth breathing recorded to be 12.0%. Our findings do agree with the observations of Sundaram that mouth breathing was more common in males (7.8%) than females (5.3%) [24]. The findings of the present study contrasts the observations by Shetty et al. that tongue thrusting is more common in boys, although in our study it was found to be more common with females (26.2%) as compared to males (23.2%) [25]. Our study also contradicts the findings of Murshid et al. which shows mouth breathing (20.2%) to be more prevalent than thumb sucking (16.7%), although our study confirms that thumb sucking (21.1%) is more prevalent than mouth breathing (12%). Moreover his findings do not focus on the population suffering from tongue thrusting which, in our study, has been concluded as the most prevalent adverse oral habit in the Saudi population [15]. **Figure 3** shows the prevalence of oral habits in different societies.

It has been established that internal worries and lack of deep affections might increase the risk of development of abnormal oral habits. Therefore, maternal deprivation, commonly seen in families with a large number of children could explain the significant increase of nail biting and thumb-sucking in children who had a higher mean number of siblings [26,27]. 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 [28]. This was in contrast with finding of Farsi and Salama who reported that sucking habit is related to parents' education and feeding methods but not related to gender, birth rank, or socioeconomic status [3].

This study was limited by being conducted in only one city in Saudi Arabia. A bigger sample including schoolchildren from all over the country is recommended to better determine the prevalence of parafunctional oral habits.

Discussion and Conclusion

In this study, an attempt was made to examine subjects representing the youth population in the Kingdom of Saudi Arabia. The study sample was evaluated in order to report the prevalence rate of parafunctional habits in Saudi children. In addition to the questionnaires, clinical examination of the children was performed to confirm the presence of parafunctional oral

Conclusion

From the data collected for this study, we found that the prevalence of para-functional oral habits among 7 to 15 years old schoolchildren was as follows:

- Tongue thrusting (25%).
- Thumb sucking (21.1%).
- Mouth breathing (12%).

The results clearly show that the overall rate of para-functional oral habits in the present group of children was high and dictates a need for more studies and prevention strategies.

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