

Prevalence of Oral Parafunctional Habits in Children and Related Factors: An Observational Cross-sectional Study

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ABSTRACT

Aim: Parafunctional habits cause movements indicating their effect as functional and structural disorders such as malocclusion and temporomandibular joint changes in the oral and dental organs. This cross-sectional study was conducted to investigate the prevalence and factors associated with parafunctional habits in 6–12-year-old children in Qom, Iran.

Materials and methods: This analytical cross-sectional study was performed on 403 6–12-year-old schoolchildren of Qom, Iran. Data collection tools included a demographic questionnaire and a checklist prepared along with a clinical examination. Data were analyzed using the Statistical Package for the Social Sciences (SPSS), with Chi-square and analysis of variance (ANOVA) tests.

Results: The mean age of children was 8.9 ± 2.03 years. Bruxism was more common than other parafunctional habits (22.6%). There was a significant relationship between oral habits with children's gender and age ($p < 0.001$). However, there was no significant relationship between oral habits and other variables such as underlying disease, economic status and parent's smoking ($p > 0.05$).

Conclusions: Given the relatively high prevalence of parafunctional habits in children, it seems that children should be investigated for the presence of such habits in order to provide the necessary education to parents and perform dental interventions to prevent complications from oral habits. Dental interventions at a younger age are easier to conduct and have a more effective preventive role.

Keywords: Bruxism, Finger sucking, Nail biting, Oral habits.

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INTRODUCTION

Parafunctional habits are learned patterns of muscle contractions that are complex in nature and are likely to have adverse effects on the teeth, jaw, muscles, and temporomandibular joint.¹ Sucking one's thumbs and other fingers, bruxism, and nail biting are the most common oral habits in children.² Among the oral habits, thumb sucking is the first and most common habit in children, involving almost 50% of the world's young population from birth to adolescence.^{3,4} There are many reasons for finger sucking, but in terms of developmental growth, mental and nutritional reasons have been investigated. Finger sucking, like other non-nutritional sucking habits, is significantly associated with malocclusion in both periods of deciduous and permanent teeth and can cause effects such as decreased maxillary arch width, increased overjet, increased crossbite, anterior open bite, and posterior crossbite.^{5,6} These functional oral habits also cause other complications such as tooth decay, tooth misalignment, speech disorders, swallowing problems, and otitis media.⁷ According to recent studies, two oral habits of nail biting and finger sucking can increase one's exposure to microbes, such as Enterobacteriaceae and *Escherichia coli*, etc. in the oral environment.^{8,9}

In general, the majority of infants suck their fingers, but this rate decreases steadily with age. Children aged 2–4 quit the behavior on their own. Children who become accustomed to finger-sucking usually continue to do so until they are 5 years old or older. Prolonged finger sucking after the age of 6 causes irreversible complications in the teeth and jaws, and the prevalence of this habit varies according to the individual's socioeconomic status in different societies.^{10,11}

Other oral habits include bruxism. Bruxism is an uncommon activity in the oral chewing system that occurs as teeth come into

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contact through rhythmic muscle contractions that frequently occur during sleep; it has been studied as a risk factor for occlusal problems.^{12,13} The complications of bruxism include facial pains and muscular hypertrophy, functional and structural disorders of the temporomandibular joint, and dream-disturbed sleep.^{14–16} Other complications of bruxism include trauma to teeth and supporting tissues, including increased sensitivity to heat, excessive loosening of teeth, damage to periodontal and periodontium tissue, etc.^{17,18}

Preventing these oral habits can reduce the prevalence of malocclusions in the community. Dentists are highly responsible for diagnosing, managing, or evaluating dental malformations in clinical dental processes.¹⁹ Since many etiologic factors of

malocclusion have a genetic origin, they cannot thus be prevented; environmental factors may be highlighted.²⁰ In this regard, early prevention of oral habits may be an important step in preventing persistent occlusal disorders, and dentists can play an important role in this regard.

Considering the importance of the prevalence of oral habits and their significant complications and as no study has been yet conducted in this regard in Qom province, this study was thus conducted to investigate the prevalence and factors associated with parafunctional habits of 6–12-year-old children in Qom, Iran.

MATERIALS AND METHODS

This cross-sectional-analytical study was conducted on 403 6–12-year-old children in schools in Qom province from February 2021 to May 2021. Samples were randomly selected from 5 schools in all 4 districts of Qom (including 20 schools), according to the population of children in that given district. Based on the study conducted by Moadeli et al.,²¹ the sample size was determined to be 403 according to the maximum sample size calculated for different habits based on a 0.29 prevalence, 0.05 type 1 error, and 0.05 error. The inclusion criteria were children's age (6–12) and studying in schools in Qom. The exclusion criteria were the dissatisfaction of parents and children to participate in the study. Data were collected using a questionnaire and clinical examination; for each child, a questionnaire was designed that included demographic information of the samples such as age, gender, the presence of any underlying disease, economic level, parent's daily smoking, and the presence of various oral habits such as finger sucking (>4–6 hours in the day), bruxism and nail biting. Completion of the questionnaire was conducted based on the information obtained through direct and telephone inquiries from the child's mother and oral and intraoral clinical examination of the child. It must be noted that the present study was approved by the Ethics Committee of Qom University of Medical Sciences with the code IR.MUQ.REC.1398.020. Moreover, all research processes were approved by the research committee of Qom University of Medical Sciences. All aspects and processes of the project were explained to the participants and parents. They were assured that all the results of the research would be published without mentioning their names. The participants were also allowed to quit the study at any time during the project. Written consent to attend the project was also obtained from the participants' parents.

Statistical Analysis

The data obtained from the questionnaire and clinical examinations were analyzed using IBM SPSS Statistics for Windows, Version 25.0. Armonk, New York, United States of America: IBM Corp. Chi-squared test, ANOVA, and Tukey's *post hoc* test were used.

RESULTS

The participants included 403 6–12-year-old children in Qom with a mean age of 8.9 ± 2.03 years. As many as 157 children (38.96%) reported at least one parafunctional habit. As many as 6 children (1.48%) reported more than one habit, and 246 children (61.04%) did not report any habit. Bruxism was more common than other parafunctional habits (22.1%), followed by nail biting (8.2%) and finger-sucking (6.7%) (Table 1).

The prevalence of finger-sucking, bruxism, and nail biting was higher in boys; however, only the prevalence of bruxism was significantly different between the two genders (Table 2).

The mean age of children who reported nail biting and bruxism was higher. ANOVA test indicated a significant difference in terms of age between groups ($p < 0.001$). Post-hoc test indicated that the mean age of the group with finger sucking ($p < 0.001$), bruxism ($p = 0.003$), and nail biting ($p = 0.019$) was significantly different from the non-affected group. Moreover, the mean age of children in the bruxism group ($p < 0.001$) and nail biting ($p < 0.001$) was significantly different from that of finger sucking group.

According to Table 3, there was no significant relationship between oral habits and variables such as underlying diseases, parents' daily smoking, and the child's family's economic level ($p > 0.05$).

DISCUSSION

The present study investigated the prevalence of oral parafunctional habits in 6–12-year-old children in Qom and the associated factors. According to the results of the study, the most common oral habits were bruxism, followed by finger-sucking and nail biting. This is completely in line with the results of the study conducted by Garde et al.²² In their study, the age range investigated was similar to that of the present study (6–12 years). Also, in the study conducted by Vejdani et al.,²³ the most prevalent oral habit was bruxism; this is in line with the results of the present study.

In the study conducted by Aloumi et al.,²⁴ bruxism was the least common, and nail biting was the most common among 3–6-year-old children; this was different from the results of the present study. In

Table 1: The frequency of oral habits in 6–12-year-old children of Qom

Oral Habit	Number	Frequency percentage
Finger sucking	27	6.7
Bruxism	91	22.6
Nail biting	38	9.4
Non-nutritional sucking	8	2
Swallowing with tongue pressure	0	0

Table 2: Comparing different oral habits with the gender of 6–12-year-old children of Qom

Habit	Yes/no	Boys	Girls	p-value
Finger sucking	Yes	20 (7.8)	7 (4.8)	0.166
	No	236 (92.2)	140 (95.2)	
Bruxism	Yes	66 (25.8)	25 (17)	0.027
	No	190 (74.2)	122 (83)	
Nail biting	Yes	27 (10.5)	11 (7.5)	0.203
	No	229 (89.5)	136 (92.5)	
Non-nutritional sucking	Yes	5 (2)	3 (2)	0.609
	No	256 (98)	144 (98)	

Table 3: Comparison of oral habits with other variable in 6–12-year-old children of Qom

Variable		Frequency and percentage	None (no oral habit)	Finger sucking	Bruxism	Nail biting	p-value	
Underlying Disease	Yes	Frequency	241	26	80	28	0.087	
		Percentage	64.3	6.9	21.3	7.5		
	No	Frequency	13	1	9	5		
		Percentage	46.4	3.6	32.1	17.9		
Parent's smoking	Yes	Frequency	218	24	70	27		0.371
		Percentage	64.3	7.1	20.6	8		
	No	Frequency	36	3	19	6		
		Percentage	56.3	4.7	29.7	9.4		
Economic level	Low (<1 million toman)	Frequency	16	3	5	4	0.556	
		Percentage	57.1	10.7	17.9	14.3		
	Average (1–3 million toman)	Frequency	230	23	83	27		
		Percentage	63.4	6.3	22.9	7.4		
	Good (>3 million toman)	Frequency	8	1	1	2		
		Percentage	66.7	8.3	8.3	16.7		

their study, the age range of children investigated was 3–6 years, being different from the present study. In the above-mentioned study, the prevalence of oral habits decreased with age; this was not in line with the results of the present study. In the present study, the prevalence of bruxism and nail biting increased with age.

According to the results of the present study, a significant relationship was found between oral habits and children's age; children with bruxism and the nail biting group were older, and children in finger-sucking and non-nutritional sucking groups were younger. In the study conducted by Aloumi et al.,²⁴ the prevalence of finger sucking decreased as children aged from 3–6 years old; this was statistically significant. The results of the study conducted by Dizej et al.²⁵ are also in line with the results of the present study. In the aforementioned study, as children aged from 6–12 years, the prevalence of oral habits in children decreased; this is in line with the results of the present study (on oral habits of nail biting and bruxism). The increasing prevalence of oral habits of bruxism and nail biting with age can be explained by the fact that as children age, they become more aware of the environment, and the factors causing anxiety, stress, and daily worries are more effective on them. Thus, the child can continue to do such habits at an older age, either consciously or unconsciously, to release themselves from such annoying factors.

The results of the present study indicated that bruxism was more common in boys, but there was no significant relationship between other types of oral habits and the gender of the child. In the study conducted by Abuaffan²⁶ no significant relationship was found between oral habits and the gender of children, but the age range of children in their study was 3–5 years, which was different from the present study. In another study conducted by Dizej et al.,²⁵ although there was no significant relationship between the prevalence of oral habits and the children's age, finger sucking was more common in boys than girls. In the study conducted by Abbasi et al.,²⁷ it was indicated that there was a significant relationship between the prevalence of finger sucking and gender; this was not in line with the results of the present study. The age range of children in the aforementioned study was 7–15 years, slightly higher than the age range of the samples of the present study.

In a review study conducted by Manfredin et al.,²⁸ bruxism was more common than other oral habits. Bruxism decreased with age, and there was often no significant relationship between this habit

and gender. All the results of their study confirm the results of the present study.

No significant relationship was found between different types of oral habits and underlying diseases, family economic level, and parents' smoking. Since these variables have not been investigated in recent studies, it was not thus possible to compare these variables with the results of other studies.

One of the strengths of this study is that in the present study, newer and broader variables were evaluated compared to the previous studies; this is highly important given the many developments that have been made on such variables in Iran. The effect of these variables on the prevalence of oral habits has been investigated for the first time in the present study.

The limitations of this study include the lack of cooperation provided by the child and parents, parents' lack of sufficient knowledge about oral habits, or the possibility of parents' bias in answering questions.

It is suggested that in future studies, more research be done in this field with the aim of investigating the various factors affecting the prevalence of oral habits and their related complications with a wider age range.

CONCLUSION

According to the results of the present study, there was a significant relationship between the prevalence of oral habits and children's age. Thus, by recognizing this sensitive age range, providing the parents with the necessary training, and conducting the required early dental interventions, the incidence of dental and skeletal complications caused by such oral habits can be reduced.

Clinical Significance

The age range of children in the present study was 6–12 years. At these ages, compared to older ages, dental interventions can be performed at a lower cost and shorter and easier treatment phases; this indicates the significance of this study.

Ethical Considerations

This article has been extracted from a Research Project that has been approved by the Ethics Committee of Qom University of Medical Sciences with the code IR.MUQ.REC.1398.020.

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