

## An epidemiological study to know the prevalence of deleterious oral habits among 6 to 12 year old children

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### Abstract:

**Background:** This study was taken to assess the prevalence of deleterious oral habits among 6-12 year old school going children.

**Materials & Methods:** A sample size of 832 children was finalized with simple random sampling technique including 444 males and 388 females. To get the demographic information and presence of harmful oral habits a closed-ended questionnaire was developed. Clinical evaluation was also done using mirror and water tests. Chi-square test was done to compare the prevalence of oral habits among different age groups and gender at  $p < 0.05$ .

**Results:** Bruxism (17.3%) was most commonly seen followed by bottle feeding (10.1%), thumb sucking (8.7%), nail biting (5.8%), tongue thrusting (4.9%) and mouth breathing (4.3%). Prevalence of all deleterious habits were more among female children and it also showed significant differences according to age.

**Conclusion:** The data showed high prevalence of these oral habits. This highlighted the need for preventive orthodontic treatment at early age of life so that future occurrence of malocclusion can be avoided.

**Key Words:** Children, oral deleterious habits, prevalence

### Introduction

Oral health is an important part of general health as well as well-being. Over the past two decades, traditional methods

of measuring oral health, which mainly focus on the absence or presence of oral diseases have been substituted by a multidimensional concept that includes the psychosocial aspects of oral health and their influence on quality of life.<sup>1</sup>

Deleterious oral habits are the common problem of paediatricians which affects the quality of life. Oral habits are repetitive behaviour in the oral cavity that result in loss of tooth structure and they include digit sucking, pacifier sucking, lip sucking and biting, nail-biting, bruxism, self-injurious habits, mouth breathing and tongue thrusting. Their effect is dependent on the nature, onset and duration of habits.<sup>2</sup>

Nonnutritive sucking behaviors (thumb sucking) are considered normal in infants and young children and usually are associated with their need to satisfy the urge for contact and security but disappears between the ages of 1 and 3½ years.<sup>3</sup> But persistent nonnutritive sucking habits may result in long-term problems and can affect the stomatognathic system, leading to an imbalance between external and internal muscle forces.<sup>4</sup> Thumb sucking and nail biting can damage the structure of the mouth and can easily allow the spread of infectious diseases. In a study in Turkey, in 2007, the authors confirmed statistically significant difference in the prevalence of *Escherichia coli* and Enterobacteria among children with such oral habits in relation to children without such habits.<sup>5</sup>

Other deleterious oral habits include bruxism which is the habitual nonfunctional forceful contact between occlusal tooth surfaces and can occur due to emotional stress,<sup>6</sup> parasomnias, traumatic brain injury, neurologic disabilities<sup>7</sup> and morphologic factors.<sup>8</sup> It causes dental attrition, headaches, temporomandibular joint dysfunction and soreness of the masticatory muscles. Tongue thrusting, an abnormal tongue position and deviation from the normal swallowing pattern, and mouth breathing may be associated with anterior open bite, abnormal speech and anterior protrusion of the maxillary incisors.<sup>9</sup>

Bone malformations may also result from the duration and frequency of harmful habits.<sup>4</sup> Hence these habits, when excessive or are continued past appropriate developmental necessity, can lead to poor dental health, be socially stigmatizing, and inhibit the development of speech clarity. Therefore, habits require a multidisciplinary approach to provide integral care to child patients. The main objective of this study was to determine the prevalence of harmful oral habits among 6 to 12 years old children.

### Materials and Methods

This study was planned among school going children aged 6 to 12 years in Karad district, India. Before scheduling the survey, the official permission was obtained from the Head of the Institutes.

A total of eight schools were contacted and 900 students from all these schools were selected with simple random sampling technique. Children who were on medications

indicates mouth breathing.<sup>10</sup> For water test, child is asked to have a small amount of water in his mouth with lips in contact without swallowing for 3 minutes. Those who were unable to maintain the lips in contact position were considered as mouth breathers.<sup>11</sup>

Prevalence rates of different oral habits studied were calculated using SPSS version 15.0. Chi-square test was done to compare the prevalence of oral habits according to age group and gender at  $p < 0.05$ .

### Results

The present sample was of 832 children with different age groups including 444 males and 388 females. Mean age of the population was  $9.56 \pm 2.875$  years.

Thumb sucking and bruxism was significantly seen more commonly among younger children followed by older ones ( $p=0.000$ ) whereas mouth breathing and nail biting were significantly more among older age groups ( $p=0.000$ ).

Table 1: Showing frequency of deleterious oral habits according to age.

Age	No	Thumb sucking		Tongue thrusting		Bruxism		Mouth breathing		Nail biting		Bottle feeding	
		No	%	No	%	No	%	No	%	No	%	No	%
6-8 years	240	36	4.4	10	1.2	96	11.5	0	0.0	0	0.0	84	10.1
8-10 years	288	24	2.9	23	2.8	48	5.8	8	0.9	12	1.4	0	0.0
10-12 years	304	12	1.4	8	0.9	0	0.0	28	3.4	36	4.4	0	0.0
p-value	832	0.000		0.041		0.000		0.000		0.000		0.000	

Table 2: Showing frequency of deleterious oral habits according to gender.

Sex	No	Thumb sucking		Tongue thrusting		Bruxism		Mouth breathing		Nail biting		Bottle feeding	
		No	%	No	%	No	%	No	%	No	%	No	%
Male	444	22	2.7	13	1.5	68	8.1	12	1.4	18	2.2	35	4.2
Female	388	50	6.0	28	3.4	76	9.2	24	2.9	30	3.6	49	5.9
p-value	832	0.000		0.000		0.202		0.010		0.042		0.026	

for common cold and with orthodontic appliances were excluded from the study. So overall sample size of 832 children was finalized for the study. A pilot study was done to ensure the level of validity and degree of repeatability (Cronbach alpha = 0.80).

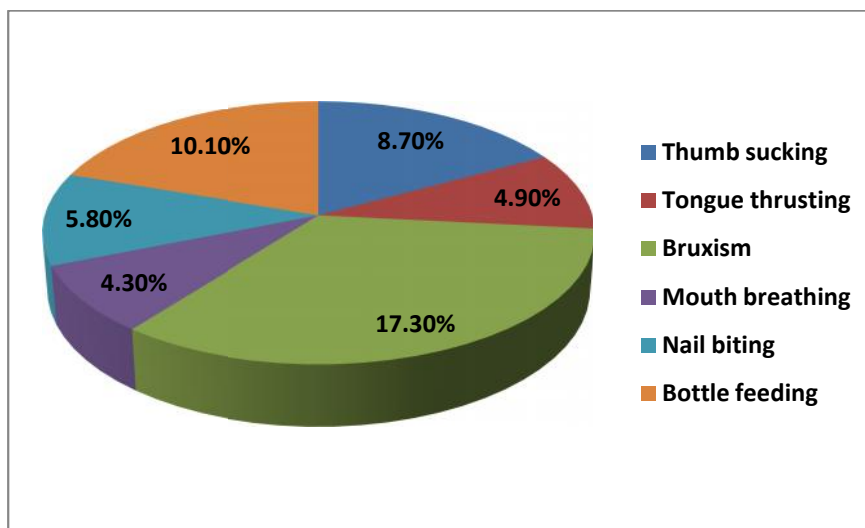
A closed-ended questionnaire was developed to gather information like age, gender and presence of deleterious oral habits. These questions were asked by the parents to investigate the habits like bruxism, mouth-breathing, nail biting, thumb sucking and bottle feeding.

A conformity clinical evaluation was also done using mirror and water tests. For mirror test, a two-sided mirror is placed below the child's nostrils and formation of vapors is observed. If it occurs on upper part of the mirror indicates nasal breathing where as on the lower part

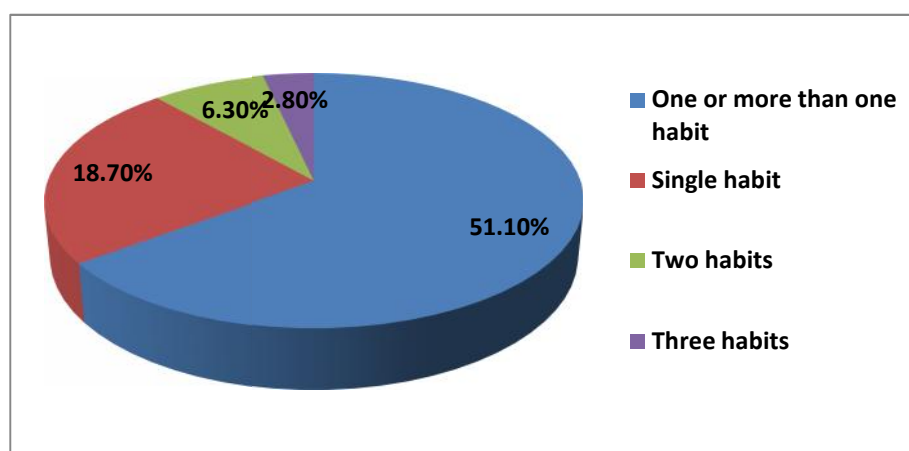
Children belonging to age group of 8 to 10 years were seen with tongue thrusting habit. The habit of bottle feeding was seen only among age group of 6-8 years i.e. 10.1% (Table 1). Prevalence of all deleterious oral habits was observed more among female children with mostly significant differences (Table 2).

Regarding type of the habit; bruxism (17.3%) was most commonly seen followed by bottle feeding (10.1%), thumb sucking (8.7%), nail biting (5.8%), tongue thrusting (4.9%) and mouth breathing (4.3%) as illustrated in Graph 1.

The results also showed that 51.1% children were having one or more than one habits; 18.7% found with single habit; 6.3% with two habits and only 2.8% with three habits (Graph 2).



**Graph 1:** Showing frequency of different deleterious oral habits among study population.



**Graph 2:** Showing prevalence of number of deleterious oral habits among study population.

## Discussion

Oral deleterious habits are often called harmful or parafunctional and include thumb sucking, bottle feeding, tongue thrusting, nail biting, lip biting and the mouth-breathing pattern. These habits have direct influence on quality of life and can affect the stomatognathic system of the body.<sup>4</sup>

The findings of the study showed that 51% of the children are involved in one or more than one oral harmful habits and the finding are in agreement with the results of Gildasya et al in children aged 6-12 years.<sup>12</sup> Whereas Motta LJ et al found preschoolers with 87.4% habits.<sup>13</sup> But lower prevalence of these oral habits had been reported by Quashie-Williams as 34.1% in school going children,<sup>14</sup> Shetty et al,<sup>15</sup> (1998) and Kharbanda et al (2003)<sup>16</sup> observed prevalence as 29.7% & 25.5% respectively in south and north Indian children.

Bhaya DP et al found tongue thrusting and mouth breathing as the most prevalent oral habits.<sup>17</sup> Kharbanda et

al observed occurrence of digit sucking most frequently in 50% of the children.<sup>16</sup> However, findings of Shetty and Munshi found a comparatively low prevalence rate of tongue thrusting (3.02%) among children in Mangalore.<sup>16</sup> The habit of mouth breathing was seen among 4.3% of study population and the results were lower when compared to the findings of the previous study done by Amr Abou-EI-Ezz et al in 2006.<sup>18</sup> Mouth breathing is one of etiological factor for alterations in normal growth of face.<sup>19</sup> Children with this habit often have morphological characteristics of the stomatognathic system. So, this habit should be diagnosed early and proper intervention to be done to avoid abnormalities.

The highest frequency of harmful oral habit was bruxism (17.3%) in this data. Whereas Liu et al stated that bruxism was in 6.5% of 2-12 year-old children in China.<sup>20</sup> Reding found 15.1% among 3-17 year-old American children.<sup>21</sup> The prevalence of bruxism in children in Saudi Arabia was reported as 8.4% by Farsi.<sup>22</sup> These differences in the

prevalence may be because of difficult diagnosis, different methods of data collection and also different samples from different ethnic groups.

In the present study, prevalence of nail biting was among 5.8% of the children and it was higher than Bhayya DP et al in children aged 11-13 years.<sup>17</sup> There was no case of lip biting in present literature where as higher incidence rate was seen in other studies of this habit.<sup>15,16</sup>

The present study showed that female children were exhibited significantly more oral habits. The reason behind the gender wise difference is due to the fact that oral habits in girls are more common due to hormonal changes and diet. However Karbhanda et al observed thumb sucking more common among girls than boys.<sup>16</sup> Further Gildasya et al also showed slightly more prevalence of the habits among boys.<sup>12</sup> Similarly significant differences were observed in the prevalence of oral habits according to age groups and this difference was also noted in other studies.<sup>15,17</sup>

### Conclusion

The results concluded that over all prevalence of deleterious oral habits in the present group was high. Bruxism was found with highest frequency. Mostly the habits were more among female children and also significant differences were observed according to age groups. Data provided baseline information for planning preventive strategies to eradicate the oral habits.

### References

1. Barbosa TS, Gavião MB. Oral health-related quality of life in children: Part II. Effects of clinical oral health status. A systematic review. *Int J Dent Hyg* 2008;6(2):100-7.
2. Piteo AM, Kennedy JD, Roberts RM, Martin AJ, Nettelbeck T, Kohler MJ, et al. Snoring and cognitive development in infancy. *Sleep Med* 2011;12:981-7.
3. Maguire JA. The evaluation and treatment of pediatric oral habits. *Dent Clin North Am* 2000; 44:659-69.
4. Agurto PV, Diaz RM, Cadiz OD, Bobenrieth FK. Oral bad habits frequency and its association with dentomaxilar abnormal development, in children three to six year old in Santiago Oriente. *Rev Chil Pediatr* 1999;70:470- 82.
5. Vogel LD. When children put their fingers in their mouths. Should parents and dentists care? *N Y State Dent J* 1998; 64(2): 48-53.
6. Monaco A, Ciammella NM, Marci MC, Pirro R, Giannoni M. The anxiety in bruxer child: A case-control study. *Minerva Stomatol* 2002;51(6):247-50.
7. Rugh JD, Harlan J. Nocturnal bruxism and temporomandibular disorders. *Adv Neurol* 1988; 49:329-41.
8. Negoro T, Briggs J, Plesh O, Nielsen I, McNeill C, Miller AJ. Bruxing patterns in children compared to intercuspal clenching and chewing as assessed with dental models, electromyography, and incisor jaw tracing: Preliminary study. *J Dent Child* 1998;65(6):449-58.
9. Dean JA, McDonald RE, Avery DA. Managing the developing occlusion. In:McDonald RE, Avery DA, (Editors). *Dentistry for the Child and Adolescent*, 7th ed. St. Louis, Mo:CV Mosby and Co; 2000. p. 178-217.
10. Cortese SG, Biondi AM. Relationship between dysfunctions and parafunctional oral habits and temporomandibular disorders in children and teenagers. *Arch Argent Pediatr* 2009;107:134-8.
11. Jorge EP, Gandini Júnior LG, Santos-Pinto A, Guariza Filho O, Castro AB. Evaluation of the effect of rapid maxillary expansion on the respiratory pattern using active anterior rhinomanometry: case report and description of the technique. *Dental Press J Orthod* 2010;15:71-9.
12. Gildasya E, Syarief H. Prevalence of oral habits in homeless children under care of Yayasan Bahtera Bandung. *Dent J* 2006;39(4):165-7.
13. Motta LJ, Alfaya TA, Marangoni AF, Agnelli R, Mesquita-Ferrari RA, Fernandes KP, Bussadori SK. Gender as risk factor for mouth breathing and other harmful oral habits in preschoolers. *Braz J Oral Sci* 2012; 11(3):377-80.
14. Quashie-Williams R, Dacosta OO, Isiekwe MC. The prevalence of oral habits among 4 to 15 year old school children in Lagos. *Niger J Health Biomed Sci* 2007;6(1):78-82.
15. Shetty SR, Munshi AK. Oral habits in children: a prevalence study. *J Indian Soc Pedod Prev Dent* 1998;17(2):61-6.
16. Kharbanda OP, Sidhu SS, Sundaram KR, Shukla DK. Oral habits in school going children of Delhi: a prevalence study. *J Indian Soc Pedo Prev Dent* 2003;21(3):120-4.

17. Bhayya DP, Shyagali TR. Prevalence of oral Habits in 11–13 year-old School Children in Gulbarga city, India. *Virtual J Orthod* 2009;8(3):1-4.
18. Abou-Ei-Ezz A, Naseef EH, Attia KH. Prevalence of Mouth Breathing as etiologic factors of malocclusion in a group of Egyptian School Children. *Egypt Dent J* 2006;52(2):703-6.
19. Cattoni DM, Fernandes FD, Di Francesco RC, Latorre Mdo R. Characteristics of the stomatognathic system of mouth breathing children: anthroposcopic approach. *Pro Fono* 2007;19:347-51.
20. Liu X, Ma Y, Wang Y, Jiang Q, Rao X, Lu X, Teng H. Brief report: An epidemiologic survey of the prevalence of sleep disorders among children 2 to 12 years old in Beijing, China. *Pediatr* 2005;115(1 Suppl):266-8.
21. Reding GR, Rubright WC, Zimmerman SO. Incidence of bruxism. *J Dent Res* 1966;45(4):1198-204.
22. Farsi NM. Symptoms and signs of temporomandibular disorders and oral parafunctions among Saudi children. *J Oral Rehabil* 2003;30(12):1200-8.