RESEARCH ARTICLE

Oral Habits in children of Rajnandgaon, Chhattisgarh, India- A prevalence study
Raghavendra Manjunath Shetty, Manoj Shetty, Nailady Sridhar Shetty, Hanumanth Reddy, Sunaina Shetty, Anil Agrawal.

Abstract

Background: Early diagnosis of abnormal habits may allow both dentists and parents to discourage these habits and avoid negative consequences. Aim: The present study was undertaken to assess the prevalence of oral habits in 6 to 11 year old children in Rajnandgaon city, Chhattisgarh, India. Methods: A total of 1891 school children aged 6 to 11 years from the city of Rajnandgaon reporting to the department of pedodontics were selected for the study. A thorough history was obtained on a specially designed proforma and presence or absence of oral habits like thumb/finger sucking, tongue thrusting, mouth breathing, lip biting, nail biting and bruxism were recorded. Data was analysed using chi-square test. Results: Prevalence of oral habits was found to be 33.2% in the total sample studied. Tongue thrust was the most prevalent habit affecting 17.4% of children, whereas 13% of children had mouth breathing habit followed by 1.7% of children with thumb/finger sucking. Prevalence of lip biting, nail biting and bruxism was found to be 0.4%, 0.3% and 0.4% respectively. Age and prevalence of thumb/finger sucking, tongue thrusting and mouth breathing were found to be statistically highly significant (p<0.001). No significant differences were found in any oral habits between boys and girls. Conclusions: Oral habits, especially if they persist beyond the preschool age, have been implicated as an important environmental etiological factor associated with the development of malocclusion. So, early diagnosis and proper treatment planning of these habits will reduce the occurrence of malocclusion.

Keywords: Thumb sucking; Tongue thrusting; Mouth breathing; Oral habits; Prevalence.

Introduction

A wide variety of oral habits in infants and young child has been the centre of much controversy for many years. Parents, pediatricians, psychologist, speech pathologists and pedodontists have discussed and argued the significance of these habits, each from the view point of expertise and responsibility. Early diagnosis of abnormal habits may allow both dentists and parents to discourage these habits to avoid negative consequence (1). Oral habits, especially if they persist beyond the preschool age, have been implicated as an important environmental etiological factor associated with the development of malocclusion (2-4). Thumb and finger sucking habits, or non nutritive sucking are considered to be the most prevalent of oral habits, with a reported incidence ranging from 13% to almost 100% at some time during infancy (5,6). The finger-sucking habit, normal in the first two or three years of life, may cause permanent damage if continued beyond this time (7). Reported maxillary changes associated with a prolonged sucking habit are proclination of the maxillary incisors increased maxillary arch length, anterior placement of the maxillary apical base, increased sella-nasion-point Angle...
(SNA) and decreased palatal arch width (8,9). Effects on the mandible include proclination of the mandibular incisors, decreased sella-nasion-point B angle and increased intermolar distance (8,9). Other dental alterations are increased overjet, decreased overbite and posterior crossbite. The tongue and lips are also affected by sucking. Lip incompetence and tongue thrust are usually associated with sucking habits (10).

Prolonged tongue thrusting habit has been shown to be associated with open bite, however if the open bite is a cause or an effect is not well established. While it has been noted that anterior position of the tongue may result in open bite (11). Tongue thrust with an open bite has been shown to be associated with long facial pattern and proclination of upper anterior teeth (12). Other associated features with tongue thrust have been high and/or narrow maxillary arch and Class II div I malocclusion. It also may lead to lisping or impaired speech.

During adolescence, the habit of mouth breathing may develop from recurrent throat infections, allergic rhinitis or nasal obstruction due to factors such as a deviated nasal septum or other anatomical causes. Long standing mouth breathing and nasal obstruction can adversely affect dentofacial growth (13).

In India overall prevalence of oral habits has been reported to be as low as 3% among the children of Ambala- North India (14) and 29.7% in Mangalore-South India (15) respectively. Hence, present study was undertaken to obtain the prevalence of oral habits in children of 6-11 years age group in Rajnandgaon city, Chhattisgarh.

**Materials and Methods**

A total of 1891 school children reporting to the Department of Pedodontics of age 6-11 years between July 2009 and June 2010 were included in the study. Selection criteria included absence of previous orthodontic treatment, premature loss of primary teeth, trauma or surgery in the dentofacial region, mental retardation and any systemic diseases. Written informed consents were obtained from all the parents. The study was approved by the ethical committee of Chhattisgarh dental college and research institute, Rajnandgaon, Chhattisgarh, India.

Each child was asked to sit comfortably on a dental chair and was subjected to a thorough history and clinical examination. A thorough history was obtained on a specially designed proforma which included the personal data (age, sex, and residence), presence or absence of oral habits like thumb/finger sucking, tongue thrusting, mouth breathing, lip biting, nail biting and bruxism. As there was a possibility that the children or parents were not aware of the tongue thrusting and mouth breathing, the children were diagnosed for these habits on the dental chair. The child was asked to swallow saliva first and then 10 ml of water. Position of the tongue during swallowing was evaluated by depressing the child’s lower lip with the operator’s thumbs and simultaneously feeling the masseter muscle activity with the index fingers. Child was diagnosed as a tongue thruster if he/she fulfilled any one of the following criteria established by Weiss and Van Houten (16).

1. He/she thrust his/her tongue against the upper central incisors or between the upper and lower central incisors during swallowing.
2. Swallowed with his/her teeth apart, and/or
3. Had excessive lower lip activity during swallowing.

Child was diagnosed as mouth breather by double ended mirror and water holding test similar to previous studies reported (14,15). A single calibrated examiner recorded the presence or absence of habits. Kappa value was 0.89. Chi-square statistic ($\chi^2$) was used to analyze the data. The threshold for the statistical significance was set at $p<0.05$. The statistical package for social sciences (SPSS 11.5 for windows) was used.

**Results**

Out of the 1891 children included in the study, 1043 were males and 848 were females [Table 1].

**Table 1: Distribution of children according to age and sex**

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Sex</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>156</td>
<td>126</td>
</tr>
<tr>
<td>7</td>
<td>181</td>
<td>109</td>
</tr>
<tr>
<td>8</td>
<td>142</td>
<td>130</td>
</tr>
<tr>
<td>9</td>
<td>135</td>
<td>156</td>
</tr>
<tr>
<td>10</td>
<td>197</td>
<td>119</td>
</tr>
<tr>
<td>11</td>
<td>232</td>
<td>208</td>
</tr>
<tr>
<td>Total</td>
<td>1043</td>
<td>848</td>
</tr>
</tbody>
</table>

Prevalence of oral habits among children was found to be 33.2% in the total sample studied. Tongue thrust was the most prevalent habit affecting 17.4% of children, whereas 13% of children had mouth breathing habit followed by 1.7% of children having thumb/finger sucking habit. Prevalence of lip biting, nail biting and bruxism was found to be 0.4%, 0.3% and 0.4% respectively [Table 2].

Association between various habits and age were tabulated and analyzed [Table 2]. The association between the age and prevalence of thumb/finger sucking, tongue thrusting and mouth breathing were found to be statistically highly significant ($p<0.001$). However, no significant differences were found in lip biting, nail biting and bruxism when associated with the age. Prevalence of various oral habits in relation to the gender was tabulated [Table 3]. However, no significant differences were found in any of the oral habits between boys and girls ($\chi^2=3.6$, $p=0.72$).

**Discussion**

Oral habits are common in children. These habits include: non-nutritive sucking habits (thumb, finger and pacifier sucking habits), tongue-thrusting, and lip or nail biting habits. The majority of oral habits are called non-nutritive sucking habits. Near the end of early childhood and the beginning of grade school, any prolonged oral habit is considered socially unacceptable and can lead to undesirable dental effects. Present study was conducted to know the prevalence of oral habits in 6-11 year old children of Rajnandgaon city, so that deleterious effects of same can be prevented. The findings of the present study showed that 33.2% of the children examined had oral habit of some or the other kind. This finding is in agreement with the results of Dacosta et al (17), who found 34.1% of the children examined presented with an oral habit. Prevalence of oral habits in Mangalore-South India was reported to be 29.7% (15) whereas 25.5% in Delhi – North India (18). However, Guaba et al (14) reported that only 3% of children demonstrated oral habits, which is very much in disagreement with our findings. Similar low prevalence (9.9%) of oral habits has been reported by Onyeoso (19), who studied the prevalence of oral habits in Nigerian children of age 7-10 years.
Table 2: Prevalence of oral habits according to age

<table>
<thead>
<tr>
<th>Oral Habit</th>
<th>Age (years)</th>
<th>Significance</th>
<th>( \chi^2 )</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thumb-Sucking</td>
<td>6 (5.0%)</td>
<td>7 (4.5%)</td>
<td>8 (1.8%)</td>
<td>9 (0.0%)</td>
</tr>
<tr>
<td>Tongue Thrusting</td>
<td>78 (27.7%)</td>
<td>71 (24.5%)</td>
<td>61 (22.4%)</td>
<td>43 (14.8%)</td>
</tr>
<tr>
<td>Mouth Breathing</td>
<td>0 (0.0%)</td>
<td>3 (1.0%)</td>
<td>40 (14.7%)</td>
<td>61 (21.0%)</td>
</tr>
<tr>
<td>Lip Biting</td>
<td>0 (0.0%)</td>
<td>1 (0.3%)</td>
<td>1 (0.4%)</td>
<td>3 (0.9%)</td>
</tr>
<tr>
<td>Nail Biting</td>
<td>1 (0.3%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>2 (0.7%)</td>
</tr>
<tr>
<td>Bruxism</td>
<td>2 (0.7%)</td>
<td>0 (0.0%)</td>
<td>2 (0.7%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>Total (in each age group)</td>
<td>94 (15.0%)</td>
<td>88 (14.0%)</td>
<td>109 (17.4%)</td>
<td>107 (17.1%)</td>
</tr>
</tbody>
</table>

*Statistically significant

Table 3: Prevalence of oral habits according to sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Thumb-sucking</th>
<th>Tongue Thrusting</th>
<th>Mouth Breathing</th>
<th>Lip Biting</th>
<th>Nail Biting</th>
<th>Bruxism</th>
<th>( \chi^2 )</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1043</td>
<td>19 (1.8%)</td>
<td>180 (17.3%)</td>
<td>146 (14.0%)</td>
<td>4 (0.4%)</td>
<td>2 (0.2%)</td>
<td>4 (0.4%)</td>
<td>3.6</td>
<td>0.72†</td>
</tr>
<tr>
<td>Female</td>
<td>848</td>
<td>14 (1.7%)</td>
<td>149 (17.6%)</td>
<td>100 (11.3%)</td>
<td>3 (0.4%)</td>
<td>3 (0.4%)</td>
<td>3 (0.4%)</td>
<td>3.6</td>
<td>0.72†</td>
</tr>
<tr>
<td>Total</td>
<td>1891</td>
<td>33 (1.7%)</td>
<td>329 (17.4%)</td>
<td>246 (13.0%)</td>
<td>7 (0.4%)</td>
<td>5 (0.3%)</td>
<td>7 (0.4%)</td>
<td>3.6</td>
<td>0.72†</td>
</tr>
</tbody>
</table>

† Not significant at p< 0.05

Tongue thrusting and mouth breathing were the most prevalent oral habits in the present study sample. Our findings are concurrent with the findings of Guaba et al (14) and Kharbanda et al (18). In contrast digit sucking was the most frequently occurring oral habits seen in 50% of the children in the study reported by Dacosta et al (17).

Present study revealed that tongue thrusting habit was prevalent in 17.4% of the children. Similar finding was reported by Kharbanda et al (18) who reported 18.1% prevalence of tongue thrust in their study. However, the present study differed with the findings of Shetty and Munshi (15) who found a comparatively low prevalence (3.02%) of tongue thrust among 560 children in the age group of 3-16 years.

Mouth breathing habit was the second most prevalent habit in the present sample with the prevalence rate of 13%. This prevalence was higher when compared to the findings of the previous studies (15,18). Abou-El-Ezz et al (20) reported that, 40% of the cases had no habits, 31% were mouth breathers, 12% had a combined habit tongue thrust and mouth breathing, 4% bit their lips, 5% sucked their thumbs and 7% were tongue thrusters in a sample of 1120 children. In the present study, thumb/finger sucking habit was seen only in
1.7% of children and was most prevalent habit after tongue thrusting and mouth breathing. However various prevalence rates of 0.7%, 3.1%, 8.1% and 16.7% have been reported in the literature (1,15,18,19). Prolonged thumb/finger sucking habit can lead to undesirable tooth movement and malocclusions. The prevalence of bruxism and lip biting was found to be 0.4%. Similar low prevalence were reported by Kharbanda et al (18). However, the previous literature on the oral habits also suggests highest prevalence of bruxism from 6.2% to 30.2% and lip biting from 1.2% to 6% (1,15,19). Nail biting was reported to be the least common oral habit with the prevalence of 0.3%. This observation is in disagreement with the findings of Shetty and Munshi (15) who reported 12.7% of children with nail biting.

There existed difference in prevalence of oral habits in different age. Oral habits were more prevalent in 11 year old children with 19% prevalence, whereas least prevalence of 14% was found in 7 year old children. A very significant finding in the present study was decrease in thumb sucking and tongue thrusting habit with increase in the age, and reverse trend in case of mouth breathing where the habit increased with increase in the age. Gellin (21) studied the prevalence of tongue thrusting in American children. He reported that 97% of the newborns had tongue thrust and this figure declined to 80% at 5-6 years and then to 3% at 12 years of age. He concluded that tongue thrusting significantly decreased with age. A steady decrease in oral habits with an increase in age was also observed by Dacosta et al (17).

Karbhanda et al (18) observed that thumb sucking was more common in girls than boys whereas mouth breathing was more common in boys compared to girls. The reason behind the gender wise difference in the occurrence of oral habits may be due to the fact that oral habits in boys are more persistent for longer period than girls because boys tend to openly fight against family’s or surrounding society’s rules than girls, including when they are told to stop practicing oral habits (22,23). However no significant gender differences were found in relation to the oral habits in the present study. The same pattern was observed among the seven to ten year old Nigerian children (19). However, the cross-sectional nature of the present study may fail to find more accurate causal relationship that may existed. Hence, an analytical and prospective study is required to find out associations and risk factors for the occurrence oral habits. Oral habits, especially if they persist beyond the preschool age, have been implicated as an important environmental etiological factor associated with the development of malocclusion. So, early diagnosis and proper treatment planning of these habits will reduce the occurrence of malocclusion.

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References


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