



## Association between deleterious oral habits and its effect on dentition among 5-15 years children

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### Article History:

Received on: 25 Jun 2020  
Revised on: 23 Jul 2020  
Accepted on: 02 Aug 2020

### Keywords:

children,  
dentition,  
malocclusion,  
oral habit

### ABSTRACT

Oral habits in children is considered to be one of the most common etiology for orthodontic malocclusion, the prolonged effect of these habits can result in alternation of orofacial structures. Habits are acquired by automatism, represented by an altered pattern of muscle contraction with complex characteristics. In very young children some habits are considered to be a normal process of development at least till 3yrs of age. Oral habits could be parafunctional or functional. It has been observed that there has been an ascending trend in the prevalence of oral habit in children. Thus the aim of this study is to determine the effects of oral habits on dentition. Completed case sheets were collected from a private dental college. Case sheets were taken from June 2019 to April 2020. Data was retrieved and evaluated by 2 reviewers. Once the data was collected, it was then tabulated based on the parameters which are habits, molar relation, malocclusion, age and gender. Correlations between the parameters are determined. The study showed that a total of 50 children ages from 5-15 years old had oral habits. Tongue thrusting was found to be the most common oral habit (44%) Class II Div I malocclusion was mostly seen in thumb sucking patients (31,6%). The 9 year old children were found to be the highest number of children with oral habits. In this study, we observed that children with habits may result in malocclusion if they persist with the habit.

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ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL3.2953>

Production and Hosted by

IJRPS | <https://ijrps.com>

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### INTRODUCTION

Oral Habits are acquired by automatism represented by an altered pattern of muscle contraction with complex characteristics which proceed unconsciously on a regular basis (Dutta and Verma, 2018). Repetitive behaviour of habit is common in the infantile period and most of them are started and stopped spontaneously. The most common and earliest repetitive behaviours seen in the infantile period is digit sucking (Maguire, 2000). Development of these habits are considered to be a part of the normal sequence of maturation process in children however they potentially become a problem / harmful one under the circumstances of mental,

physical and socioeconomic stress (Maguire, 2000). In children less than 3yrs of age, some habits are considered to be a part of the developmental process (Rani, 1997). Most of the habits tend to be more pleasant and the children tend to extend the habit over a period of time. They may be physiological or functional such as chewing and swallowing or parafunctional (deleterious) such as finger/thumb, pacifier and bottle sucking (Rebouças, 2017). The continuation of any deleterious parafunctional oral habit beyond a particular duration can show the effect on oral health however they play a significant role in altering the malocclusion, proclination of teeth, inter arch relationship, interfering with normal growth of jaw and function of the orofacial musculature (Farsi and Salama, 1997). Oral habits showed a wide range of prevalence between various population, races and countries and it is most commonly believed to be influenced by various factors such as gender, rank of the child in the family, type of feeding methods, socioeconomic status of the family, maternal age, maternal occupation and education levels.

There has been an increase of prevalence of oral habits in children (Maguire, 2000; Dutta and Verma, 2018). In India there has been a reported prevalence of oral habits in mixed dentition as low as 3% in North India and 30% in South India. Oral habits are not as prevalent compared to dental caries however it is an issue which needs to be addressed to the public to ensure that their children do attain these habits. Like how there are various treatments to treat dental caries, avulsion, trauma injuries, cyst etc (Christabel, 2015; Gurunathan and Shanmugaavel, 2016; Govindaraju et al., 2017a,b; Govindaraju, 2017; Govindaraju et al., 2017c; Jeevanandan, 2017).

There are also various treatments for oral habits. Not only dental caries but also dental fluorosis is also common in children which is equally as prevalent as oral habits (Somasundaram et al., 2015; Ramakrishnan et al., 2018). Thus this study was aimed to assess the association of oral habits on the dentition of the child (Govindaraju et al., 2017a; Packiri et al., 2017; Ravikumar et al., 2017; Jeevanandan and Govindaraju, 2018; Nair, 2018; Subramanyam, 2018; Panchal et al., 2019).

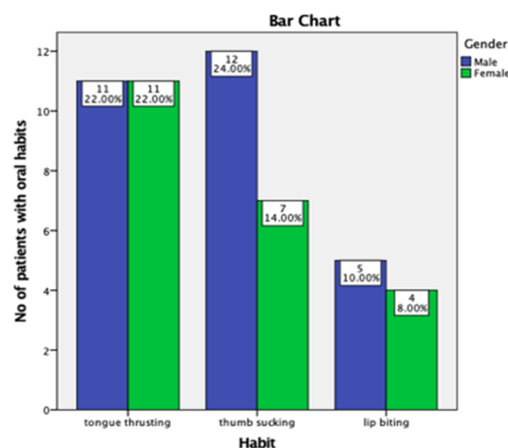
**MATERIALS AND METHODS**

A university set up was selected for this study which provided easy accessibility to data which provided a population with similar ethnicity for this study. There were 2 reviewers for this study to analyse the data obtained. The approval for

this university setting was obtained from the Institution of Ethics Board. The institutional ethical committee provided approval for the study (SDC/SIHEC/2020/DIASDATA/0619-0320). The sample size was taken from a given period of time which is June 2019 to April 2020. Exclusion criteria were patient records that were incomplete or repetitive. There were three people involved in this study, - the guide, the reviewer and researcher. These patient details were obtained and the data was extracted and tabulated based on the parameters required. Once the case details have been obtained, the data is then extracted and tabulated based on the parameters which are habits, molar relation, effect of habits and ages.

**Statistical analysis**

Once the results have been tabulated based on the parameters, the data is then exported to SPSS software. Frequency and percentage were employed in the analysis. Correlations between the parameters; are habits, molar relation, effect of habits and ages. Charts and tables were added to represent the correlation between the parameters.



**Figure 1: This graph represents the correlation of different habits and gender**

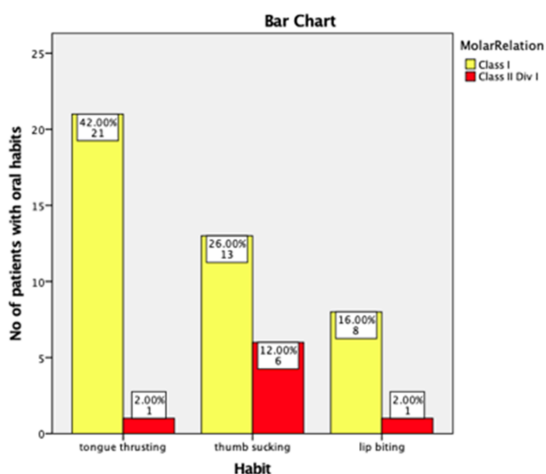
**RESULTS AND DISCUSSION**

A total of 50 patients were identified to have oral habits. The effects of oral habits on dentition were noted. Distribution of habits based on gender was depicted in Figure 1. X axis represents various habits and Y axis the number of patients based on gender. Blue colour denotes males and green denotes females. Most common habit was tongue thrusting (44%). Males were found to be highest in thumb sucking habit (24%) whereas females were found to be highest in tongue thrusting habit (22%). P-value was 0.699 > 0.05, statistically not significant (Chi square test).

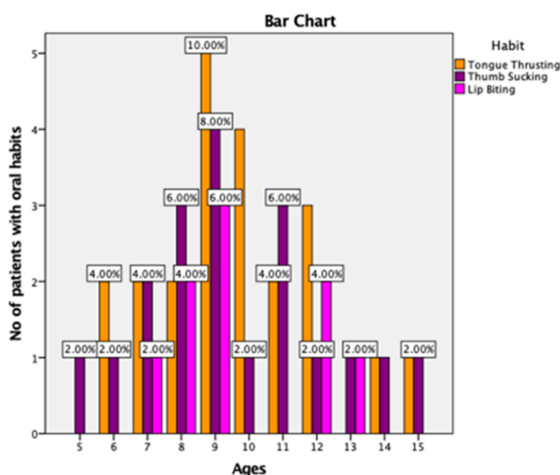
**Table 1: This table shows the effect of habits on the dentition. Open bite was the most common malocclusion seen in tongue thrusting (n=14)**

Habit	Overjet	Overbite	Crossbite	Open bite	Chi Square Test	P Value
Tongue Thrusting	12	1	5	14	3.026	0.220
Thumb Sucking	7	0	9	5		
Lip Biting	3	0	4	0		

Overbite was not seen in patients with thumb sucking and lip biting habits. Open bite was not seen in lip biting habit. P value 0.220 > 0.05 , statistically not significant (Chi-square test)



**Figure 2: This graph represents the correlation of different habits and molar relationships**



**Figure 3: This graph represents the association of different habits and ages**

It was found that the majority of the patients were male followed by females. The most common habit among the patients was tongue thrusting followed by thumb sucking and finally lip biting. Distribution of molar relation based on habit was depicted in Figure 2. X axis represents the various habits and Y axis represents the number of patients with oral habits based on molar relation. Yellow colour denotes Class I and red colour denotes Class II Div I. It shows that

Class I was mostly seen in tongue thrusting habit (42%) and Class II Div I was mostly seen in thumb sucking habit (12%). P value 0.057 = 0.05 ,statistically significant (Chi square test).

It was found most of the participants have a Class I molar relation. Class II Div I was the highest seen in thumb sucking patients. Distribution of habits based on ages is shown in Figure 3. Y axis represents the number of patients with various oral habits and X axis represents the ages of children with oral habits. Orange colour represents tongue thrusting, purple colour represents thumb sucking and pink colour represents lip biting. It shows that the maximum number of patients with oral habits was seen in 9 year old children (24%) and in this age the most common oral habit is tongue thrusting (10%). The least number of patients with oral habits was seen in 5 year old children (2%), only thumb sucking habit was seen in this age group. P-value 0.355 > 0.05 , statistically not significant (Chi square test).

9 year old children were found to be the highest and 5 year old children were found to be the least of the whole participants. The effect of oral habit on dentition can be seen in Table 1. It was found that only 14 pts in thumb sucking have an open bite. 9 patients with thumb sucking have crossbite. Overbite was not seen in patients with thumb sucking and lip biting habits. Open bite was not seen in lip biting habit. The most important contributory factor in the establishment of malocclusion is a child's deleterious oral habit beyond a period of time. The intensity, duration and frequency of the habit plays an important role in the severity of the malocclusion. In some children this parafunctional habits in children is considered as a sign of distress feeling by the children and emotional instability (Brusola, 2005). Children in particular practice these anomalous habit as a way to seek attention, possibly because they find themselves lack of parental attention from the mother or father due to their personal issues, lack of emotional maturity or constant changes in family (Murrieta-Pruneda, 2009) Based on our study tongue thrusting was found to be the most com-

mon oral habit among the children. In this study, all the participants have only one oral habit. In another study, it was found that the majority had only one oral habit present, however 69 (38%) children presented with more than one oral habit (Dutta and Verma, 2018). Lip biting was found to be the most prevalent habit (Murrieta-Pruneda, 2009). In another study, they have found both thumb sucking and bruxism were the second most prevalent habit with the incidence rate of 12.8%, a study by Ahmed and Abuaffian found that mouth breathing (11%) was least prevalent habit when compared to other habits

Males were found to be the most number of participants in our study, similar to most of the other studies. In another study conducted by Verma et al, they identified boys to have higher prevalence of developing oral habits, but this difference was not significant when individual habits are considered (Dutta and Verma, 2018). The reason behind why males have a higher tendency to oral habits could be due to the fact that a higher level of expectation in the performance of boys by the family and nonacceptance/rejection by the peer group in the society could be attributed to this finding. It was found that open bite was the mostly seen malocclusion among the children especially in tongue thrusting patients. In a study, it was found that the most common malocclusion was anterior open bite with a prevalence of 3.4%. Overbite was found to be the least common malocclusion seen.

## CONCLUSION

Within the limitations of the study, oral habits have an adverse effect on dentition. Based on our study, overjet and crossbite was the most common malocclusion in all tongue thrusting, thumb sucking and lip biting.

## ACKNOWLEDGEMENT

The authors are thankful to Saveetha Dental College for providing a platform to express our knowledge.

## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

## Funding Support

The authors declare that they have no funding support for this study.

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