
Assessment of Parafunctional Habits Among South Indian Population: A Retrospective Institutional Study

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Abstract: Parafunctional habits are any abnormal behaviour or functioning of the oral structures and associated muscles. Abnormal behaviour commonly includes bruxism, thumb-sucking, breathing disorder and lip biting. The aim of the study was to assess parafunctional oral habits like tongue thrusting, mouth breathing and thumb-sucking among the South Indian population. Completed case sheets were collected from patients reported to a private Dental Hospital, India during the time frame from June 2019 to March 2020. Data was retrieved and evaluated by 2 reviewers. In this study, more children were associated with parafunctional habits between the age group 5-9 compared to children in the age group of 10-14 years. Parafunctional habits were found to be gender related. The Incidence of these habits were found to be more in boys than in girls, but not statistically significant correlation. Parafunctional habits like lip biting, tongue thrusting and thumb-sucking were found to be associated more in the age group of 5-9yrs old. Fixed appliances are the preferred treatment option when compared to removable appliances.

Keywords: Parafunctional habits, Habit breaking appliances, Fixed appliance, Removable appliance.

INTRODUCTION

Early diagnosis of various parafunctional oral habits allows both dentists and patients to discourage their habits to avoid negative consequences.(Jeevanandan, 2017) There always has been an association between parafunctional oral habits and occlusal abnormalities. (Govindaraju, Jeevanandan and Subramanian, 2017a) These parafunctional oral habits include breathing disorder, bruxism, thumb-sucking, tongue thrusting and lip biting.(Govindaraju, Jeevanandan and Subramanian, 2017b) These habits in turn affect the structure of the mouth. Early diagnosis of these has not been made.(Somasundaram, 2015) Many children stop the habit during the preschool years, but some continue into their teenage or adult year. (Jeevanandan and Govindaraju, 2018) Thumb sucking should be discouraged and is socially not acceptable even if there were no ill effects on occlusion.(Govindaraju, 2017) Ravikumar believes that the effect of thumb-sucking habit on the maxillary and mandibular bones and the dental arch depends on several factors.(Ravikumar, Jeevanandan and Subramanian, 2017) The factors include the frequency with which the habit is practiced, the duration of the habit, the orthogenic development and the child's state of health.(Panchal and Jeevanandan, 2019)Mouth breathing may be associated with anterior open bite, abnormal speech and anterior protrusion of the maxillary incisors.(Christabel and Linda Christabel, 2015)Management may consist of simple habit control, myofunctional therapy, habit breaking appliances, orthodontics and any possible surgery.

The prevalence of parafunctional habits among 6-12 years was found to be as follows: bruxism(17.3%), thumb sucking (8.7%), nail biting (5.8%), tongue thrusting (4.9%) and mouth breathing (4.3%).(Packiri, Gurunathan and Selvarasu, 2017)

The American Academy of Pediatric Dentistry(AAPD) defined bruxism as the habitual, non-functional, forceful contact between tooth surfaces which can occur while asleep or awake.(Gurunathan and Shanmugaavel, 2016)Gurunathan reported that the complications include: dental attrition, headaches, temporomandibular joint dysfunction and soreness of the masticatory muscles.(Govindaraju and Gurunathan, 2017) The AAPD recognises that the well being of an infant, child or an adolescent can be affected by oral habits and encourages health practitioners to take an individualized approach in the management of their habits.(Subramanyam *et al.*, 2018) Until now, there has been no conclusive data regarding the relationship of sex or number of siblings on the prevalence of abnormal oral habits.(Fluoride, Fluoridated Toothpaste Efficacy

And Its Safety In Children - Review', 2018) Also in literature, there has been no apparent information about whether good oral health knowledge of children could modify their behaviour, thereby reducing the incidence of parafunctional oral habits. (Nair *et al.*, 2018) The aim of the study was to assess parafunctional oral habits like tongue thrusting, mouth breathing and thumb-sucking among a sample in the South Indian population. Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

MATERIALS AND METHODS

Study Design

Retrospective, descriptive study.

Study Setting

The study was a hospital-based study conducted in Saveetha Dental College, Chennai. Data was retrieved from Dental Information Archiving Software (DIAS) and was examined by two examiners.

Ethical approval

Prior to starting study, ethical approval was obtained from Scientific Review Board, Saveetha Dental College, SIMATS University.

Study Population

The study population consists of patients reporting to the Department of Paediatric dentistry of Saveetha Dental College.

Study Period

The study was conducted between June 2019 - March 2020.

Inclusion Criteria

1) Patients aged between 5 and 14 years. 3) Patients willing to take part in the procedure. 4) Patients with parafunctional habits.

Exclusion Criteria

1) Patients aged above 18 years. 2) Patients with no parafunctional habits. 3) Patients not willing to take part in the procedure.

Study design

The case sheet entries were all entered by dentists. All the records in the above mentioned period were verified. Cross verification of all the diagnosis, intra oral pictures and case sheets were done. The study included both the internal and external validity.

Study method

All the data was obtained from the Dental Information Archiving Software (DIAS). All the patient related details like the patient identification numbers were obtained from the department of paediatric dentistry.

Study analysis

The data collected was tabulated in Excel and imported to the SPSS software. The Incomplete data was verified by the concerned department. Possibility of bias was excluded from this study. The dependent factors in this study included habits, age, parafunctional habits. The independent factors include gender, tooth number. All the data was analysed using SPSS V20. Descriptive Statistics were done and the test for the proportion was done. Chi square test was assessed and tabulated.

RESULTS AND DISCUSSION

A total of 86000 case records of all patients who reported to the Hospital in the time frame were taken into the analysis, out of them 23 children treated for oral habits were taken into the study using a random sampling method. From the study we found that more children were associated with parafunctional habits between age

groups of 5-9 then children in the age group of 10-14 years. The study also showed that the parafunctional habits were gender related.(Campbell, 1870) The incidence has found to be more in guys than in girls.(Vanderas and Manetas, 1995)

In table 1, we have compared the association of age with parafunctional habits and we infer that parafunctional habits are associated with the age group of 5-9 years than the age group of 10-14 years. Parafunctional habits like lip biting, tongue thrusting and thumb-sucking were found to be associated more in the age groups of 5-9 than 10-14 years.(Bayardo *et al.*, 1996) It has been established that internal worries and lack of deep affections might increase the risk of development of abnormal oral habits.(Nowak and Warren, 2000)Therefore, maternal deprivation, commonly seen in families with a large number of children could explain the significant increase of thumb sucking among children who had a higher meaning number of siblings.(Okeson, 1989)

From table 2 we infer that, Parafunctional habits are associated with gender it was found to be more in guys than in girls.(Ivanhoe, Lai and Francisco, 1997) Parafunctional habits like lip biting, tongue thrusting and thumb-sucking were found to be associated more with males than the females.(Nissani, 2001)

From table 3, we infer that a fixed habit breaking appliance was more useful in breaking the habit than a removable appliance.

Fixed appliances are usually more effective in breaking the habit as they create a mechanical barrier and prevent the tongue for example from thrusting between the incisors. In severe cases with severe thumb/digit sucking habit, an anterior open bite develops. The usual fixed appliances given are palatal crib, u-loop, tongue bead.

Adequate knowledge of oral health alone may not be enough to overcome the threshold of behavioural modification and prevention of harmful oral habits as suggested by Ethinger.(Ettinger, 1987) Furthermore, high prevalence of parafunctional oral habits observed in this work emphasized the importance of regular dental visits of the children for early recognition and treatment of these habits that could affect the dentoalveolar structures of the children If not detected early.(Dean, 2016)

The findings obtained from the present study adds to the consequence with the previous studies. The present study was performed for the available smaller sample size in single Dental Hospital which may not provide results of an entire population. So further studies must be done in a larger population. Similar studies can be performed under a larger population to assess parafunctional habits among a sample in the South Indian population.Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

CONCLUSION

From the present study, we conclude that parafunctional habits like lip biting, tongue thrusting and thumb sucking were found to be associated more in the age group of 5-9 than 10-14 years. Parafunctional habits are associated with gender, it is found to be more in guys than in girls.

AUTHOR CONTRIBUTIONS

First author (Rushabh S.Kamdar) performed the analysis,interpretation and wrote the manuscript. Second author (Dr. Mahesh) contributed to conception, data design, analysis, interpretation and critically revised the manuscript. Third author (Dr.Arun) participated in the study and revised the manuscript. All the three authors have discussed the results and contributed to the final manuscript.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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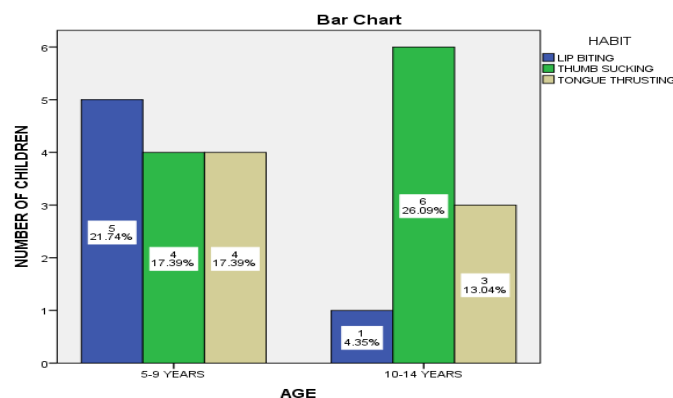
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Table 1: Shows the association between two age groups (5-9yrs) and (10-14yrs) with various oral habits. Thumb sucking (n=10) was the most common among both the age group compared to lip biting (n=6) and tongue thrusting (n=7). Chi-square analysis showed no significant relationship between age and type of habit, $p=0.238$ ($p>0.05$)

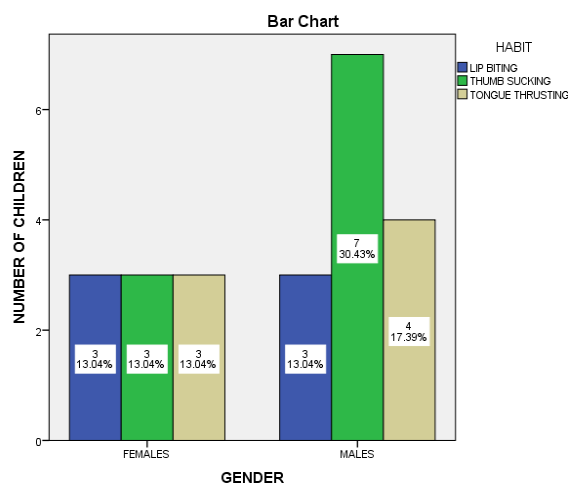
| | | Habit | | | Total | Chi-square test |
|-------|-------|------------|---------------|------------------|-------|-----------------|
| | | Lip biting | Thumb sucking | Tongue thrusting | | |
| Age | 5-9 | 5 | 4 | 4 | 13 | 0.238 |
| | 10-14 | 1 | 6 | 3 | 10 | |
| Total | | 6 | 10 | 7 | 23 | |



Graph 1: This graph represents the correlation of age and the habit present. The most parafunctional habits start at the age groups of 5-9 years and continue till the age groups 10-14 years. The graph shows that the lip biting habit reduces as the age increases, the thumb sucking habit keeps peaking whereas the tongue thrusting habit also reduces as the age keeps increasing. Chi-square analysis showed no statistically significant relation with age and oral habits, P value (0.238) > 0.05.

Table 2: Shows the association between gender with various oral habits. The parafunctional habits showed more prevalence for occurrence in males compared to females, although it was not statistically significant. Chi-square analysis showed no significant relationship between gender and type of habit, $p=0.709(p>0.05)$

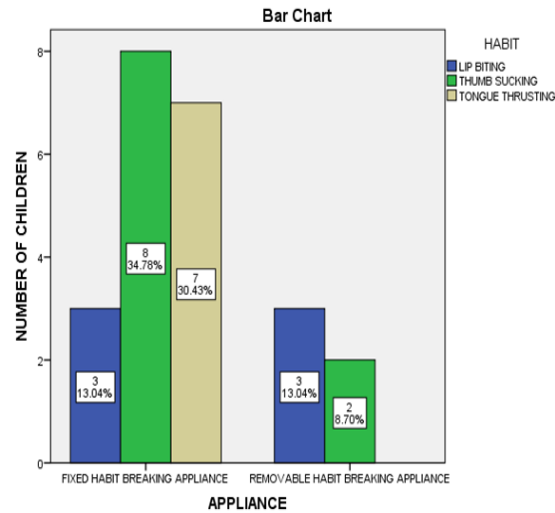
| | | Habit | | | Total | Pearson Chi-Square |
|--------|--------|------------|---------------|------------------|-------|--------------------|
| | | Lip biting | Thumb sucking | Tongue thrusting | | |
| Gender | Female | 3 | 3 | 3 | 9 | 0.709 |
| | Male | 3 | 7 | 4 | 14 | |
| Total | | 6 | 10 | 7 | 23 | |



Graph 2: This graph represents the correlation between gender and the habit present. Parafunctional habits were most commonly seen in males than females. The parafunctional habits such as Lip biting, thumb sucking and tongue thrusting habits were most commonly seen in males than in females. P value (0.709)>0.05 hence not a statistically significant relationship between gender and occurrence of oral habit, (Chi-square test).

Table 3: Shows the association between the type of appliance with various oral habits. Fixed appliances are the most preferred treatment modality compared to removable appliances. Chi-square analysis showed a significant relationship between the type of appliance fabricated and type of the habit, $p=0.042(p<0.05)$

| Appliance | | Habit | | | Total | Pearson Chi-Square |
|-----------|---------------------|------------|---------------|------------------|-------|--------------------|
| | | Lip biting | Thumb sucking | Tongue thrusting | | |
| | Fixed appliance | 3 | 8 | 7 | 18 | 0.042 |
| | Removable appliance | 3 | 2 | 0 | 5 | |
| Total | | 6 | 10 | 7 | 23 | |



Graph 3: This graph represents the correlation between the appliance given and the habit present. The fixed habit breaking appliance was given mainly for lip biting habit, tongue thrusting habit and thumb sucking habit whereas the removable habit breaking appliance was given for only lip biting and thumb sucking. P value(0.042)<0.05, hence it shows a significant association between the appliance given and the number of children (Chi-square test).