PREVALENCE OF THUMB SUCKING IN PATIENTS WITH CLASS II DIVISION I MALOCCLUSION

Suhas Manoharan¹, Harish Babu²*, S Aravind Kumar³

1. Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India
   Email: suhaas97@gmail.com

2. Professor, Department of Orthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of medical and Technical sciences,(SIMATS) Saveetha University, Chennai, India
   Email: harish.ortho@gmail.com

3. Professor and Head, Department of Orthodontics, Saveetha dental College, SIMATS, Saveetha University, Chennai, 162, Poonamallee high Road, Chennai-600077,Tamil Nadu, India
   Contact no : 9791183388
   Email: aravindkumar@saveetha.com

*Corresponding author: Professor Babu

ABSTRACT

Aim: The aim of the study was to ascertain the prevalence of thumb sucking habit among patients with Class II Division I malocclusion. Materials and methods: A retrospective study was done based on data analysed from 86000 patients records collected in a dental outpatient department. Patients records with Class II Division I malocclusion were chosen and patients within the age group of 10 to 35 were included. Data on age, gender, history of habits and malocclusion were recorded and tabulated in a MS excel worksheet. This data was later exported to SPSS version 2.0 for statistical analysis. Chi square tests for association between genders, habit and malocclusion was done. Result: Results of the study showed that 0.19% of the total study population had a history of thumb sucking. 51.76% of males and 48.24% of females with Class II Division I malocclusion had a history of thumb sucking. Chi square test for association between gender and history of thumb sucking habit showed a chi square value of 0.308 and p value of 0.579 (p value > 0.05 statistically insignificant). Conclusion: From the results of the study it can be concluded that within the study population a history of thumb sucking does not play a strong role in the etiology of Class II Division I malocclusion and a multifactorial approach to the etiology of Class II Division I malocclusion is needed.

Keywords: malocclusion, overjet, thumb sucking

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INTRODUCTION

Thumb sucking habit is a very common habit among infants and usually ceases as the child grows into childhood [1]. This habit is usually self inhibitory and disappears by the age of 3-4 years of age but very rarely it may continue into adulthood [2]. Prolonging of thumb sucking maybe linked to hunger, pleasure, hyperactivity, stress, depression, boredom or sadness [3]. Studies have shown anxiety and stress in a child can lead thumb sucking habit to prolong late in adulthood [3]. Such children can be managed effectively by regular counselling sessions, intra oral habit breaking appliances, positive reinforcement or taste deterrents. Previous literature mention, a bitter sour solution made up of asafoetida, quinine, pepper or castor oil as taste deterrents to reduce thumb sucking in babies, however their success is minimal [4,5]. Newer solutions such as femite show moderate to good success. Some studies advocate the use of adhesive tapes, but it has a risk of reduced blood supply and infections [5]. Usage of orthodontic appliance shows good results but over time may lead to decalcification of enamel leading to increased incidence of dental caries [6]. Success of Orthodontic appliances also depends on patient cooperation. It is proven and established that class II Division I malocclusion is linked to thumb sucking habit. [7–10] Apart from thumb sucking habits other factors such as genetics and environment play a major role. Thumb sucking is a natural reflex or habit that starts at an early age. Previously our team had conducted numerous clinical trials [11–15], lab studies [16–23] and other studies [24, 25] over the past 5 years. This field of orthodontics is well researched, however no recent studies among the particular ethnic population is not done yet. Such a study can help to create a better treatment plan and improve patient care. This study aims to ascertain the prevalence of a history of thumb sucking and its association with class II malocclusion.

MATERIALS AND METHODS

Study design and setting:

Patient records from the digital database of Saveetha Dental College and hospitals were retrieved for the purpose of this study. 43744 patient records from June 2019 to March 2020 were reviewed for patients having Class II Division I malocclusion. Patients from the age group of 10 to 35 were included in the study. Patient records with incomplete or censored data, those who visited outside the time frame and did not belong to the age group were excluded.

Data collection

Data was collected from the digital database based on keywords and filters such as thumb sucking and class II malocclusion. All patients with class II malocclusion Division I was included in the study. Case sheets with incomplete data were excluded. A total of 380 patient records which fulfilled the inclusion and exclusion criteria were included in the study. Patient records were cross verified using intraoral photographs. Age groups of patients involved in the study are 20-25 years, 25-30 years and 30-35 years. A university hospital based study provided ease of data availability; however geographical isolation of the study sample was a disadvantage. Data on age, gender, history of habits and malocclusion were recorded and tabulated in an MS excel worksheet. The tabulated data was exported to IBM SPSS software [Version 20: IBM Corporation NY USA] for statistical analysis.
Statistical Analysis
Dependent variable is patients with thumb sucking habit. Independent variables were age and gender, periodontal status. Descriptive statistics was used to determine the frequencies of gender and age distribution of patients with history of thumb sucking. Chi square analysis to assess the association of thumb sucking habit and gender. Pearson chi square test was used to identify any significant level of association; significance level was set at 0.05.

Ethical Approval
The ethical approval for the retrospective study was obtained from the institutional ethics board. Ethical approval number: SDC/SIHEC/2020/DIASDATA/0619-0320.

RESULTS AND DISCUSSION

Results of the study showed that 0.19% of the total study population had a history of thumb sucking. 51.76% of males and 48.24% of females with Class II Division I malocclusion had a history of thumb sucking. Chi square test for association between gender and history of thumb sucking habit showed a chi square value of 0.484 and p value of 0.782 (p value > 0.05 statistically insignificant). Hence there wasn't any association between gender and thumb sucking habit. Figure 2 shows that 48.15% of the patients in the age group of 10-15 gave history of thumb sucking. Figure 3 representing gender wise distribution of population shows that 53.7% of the males and 46.3% of the females gave history of thumb sucking habit. Figure 4 represents the association between class II Division 1 and thumb sucking habit. It shows that only 7.06% of males and 4.71% of females shows thumb sucking habit associated with class 2 Division 1.

Thumb sucking is a common habit that develops in infancy which if not stopped it may lead to anteriors open bite, class II malocclusion and proclined upper anteriors. It will also result in facial asymmetry [9,26]. According to Singh Sp[27], 22 out of 57 children had a history of thumb sucking for almost 18 months and class II Division 1. The association was statistically significant. Goto et al [28] claimed that for most children the thumb sucking habit disappears by 2 - 3 yrs. But in some cases it may extend till the eruption of permanent incisors which lead to proclination of upper incisors labially and mandibular incisors . Dental malocclusions can occur as a result of hereditary and environmental factors. Multiple studies [7,27] have shown class II malocclusions occur due to inherited genes which cause poor development of mandible and environmental factors such as adverse habits like thumb sucking or mouth breathing and early tooth loss.

In case, thumb sucking habit remains persistent beyond 4 years of age , higher prevalence of class II Division I is seen[29,30]. Imbalance of force from soft tissues, tongue thrusting habits, poor tongue resting posture, low muscle tonicity of lips can result in excessive proclination and an open bite[31]. Apart from all these factors, tooth loss at early age can lead to migration of molars which can contribute to developing a class II malocclusion [32]. Class II
malocclusion shows excess protrusion of maxilla or retrusion of mandible [32]. According to McNamara 12, 85% of the children involved in the study showed mandibular retrusion and excessive vertical growth. Dental features of class II malocclusion are increased overjet and proclined upper incisors primarily. Vertical relationship may vary from deep bite to an open bite. If habits such as thumb sucking are the reason for class II malocclusion early habit cessation has to be done. Habit cessation has to be done before eruption of the primary incisors which is considered as the critical period. Padure et al[33] suggested that there was no significant difference statistically between thumb sucking and other etiologies leading to class II Division I. However a lot of opposing literatures are present. Singh et al [27] shows that the association between class II Division to be statistically significant. The study being an institutional study possesses a lot of limitations. Such a study does not represent a large population and all ethnic groups. Subjective bias or error may also creep in. A detailed study including all outpatients in a similar setup or a broad study involving multiple ethnic groups may be carried out to provide a more concrete result.

CONCLUSION

Within the limits of this study it can be concluded that a prevalence of thumb sucking in patients with Class II Division I was 0.19%. Thumb sucking habit was prevalent in males (53.7%) compared to females (46.3%). No statistically significant association was found between gender and thumb sucking.

CONFLICT OF INTEREST: The authors have no conflict of interest.

AUTHOR CONTRIBUTIONS
Suhas Manoharan carried out the retrospective study, planning the study design, collection and analysis of data and drafted the manuscript. Harish Babu and Aravind Kumar aided in conception of the topic, supervision and appraisal of the manuscript.

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REFERENCE


Figure 1: Pie Chart depicts distribution of thumb sucking among patients. From the pie chart it is evident that only 0.19\%(green) of the entire study population shows thumb sucking habit.
Figure 2: Bar chart depicting the age distribution of patients with thumb sucking habit. X axis depicts the age of patients. Y axis represents the patients with history thumb sucking habit. The graph shows that 48.15% of the patients in the age group of 10-15 have the habit of thumb sucking. (Purple)
Figure 3: Bar chart depicting the gender distribution of patients with history thumb sucking. X axis depicts the gender distribution of patients. Y axis represents the patients with a history of thumb sucking. The graph shows that thumb sucking habit was prevalent in males (53.7%; green) compared to females (46.3%, blue).
Figure 4: Bar chart depicting the association of gender with thumb sucking habit in patients. X axis depicts the gender of patients. Y axis represents the patients with a history of thumb sucking. The graph shows that only 7.06% of males and 4.71% of females show thumb sucking habit. P value was 0.579 (p > 0.05). Data analysed is statistically insignificant. Hence no association was found between gender and thumb sucking habit.