HABIT BREAKING APPLIANCES IN THE MANAGEMENT OF PARAFUNCTIONAL ORAL HABITS

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ABSTRACT
Oral habits such as finger and thumb sucking, lip sucking, mouth breathing when used excessively or continuously can lead to poor dental health or malocclusion. The use of habit breaking appliances will restrict oral habits and prevent malocclusion. The aim of this study was to evaluate the prevalence, gender and age distribution of usage of habit breaking appliances in the management of parafunctional oral habits. 44,100 patient records were reviewed from June 2019 to March 2020. Patients who had undergone treatment with habit breaking appliances were selected and their treatment details were obtained from the patient records to obtain the prevalence. Details on habits and habit breaking appliances were also noted and tabulated in excel and imported to SPSS. Descriptive statistics and chi square test were done. There was a statistical significance between age and habits breaking appliances (p<0.05). No statistical significance was noted between gender and appliance usage. Treatment with habit breaking appliances was more prevalent in males. Thumb sucking was the most prevalent habit among the studied population and tongue crib was the preferred choice of appliance.

Key words
Habit breaking appliance; malocclusion; oral habits; thumb sucking.

INTRODUCTION
Habits are a repetitive action that is being done automatically (Shahraki, Yassaei and Moghadam, 2012; Kamdar and Al-Shahrani, 2015). The presence of oral habits affects dental health and brings about malocclusion depending on frequency, duration, intensity during growth and development which leads to changes in bone and facial tissues and occlusion (Warren et al., 2001; Restrepo, 2010; Oropeza et al., 2014).
Habits are the most frequent cause of these malocclusion seen in early childhood and mixed dentition stage (Aasim et al., 2014). Oral habits are divided into acquired oral habits and compulsive oral habits (Sb, 1998). Oral habits which affect the dentoalveolar structures are thumb sucking, finger biting or finger sucking, tongue thrusting, lip biting or lip sucking, bruxism, mouth breathing (Kamdar and Al-Shahrani, 2015). Identification of any of the above mentioned habits and recognition of risk factors prevent major anomalies.
Tongue thrusting takes place because of delayed transition between infantile and adult swallowing pattern. It results in open bite, cross bite, increased overjet, class 2 malocclusions (Melsen, Stensgaard and Pedersen, 1979). Tongue crib appliances are effective in breaking the tongue thrusting habit (Haryett et al., 1967; Schwestka-Polly, Engelke and Hoch, 1995; Villa and Cisneros, 1997; Sayin et al., 2006). Thumb sucking causes anterior open bite, increased overjet, posterior crossbite, lingual inclination of lower incisors and labial inclination of upper incisors (Kamdar and Al-Shahrani, 2015). The use of habit breaking appliances prevent development of such malocclusion.

Previously our college had conducted many clinical trials (Samantha et al., 2017) (Felicita, 2017b) (Jain, Kumar and Manjula, 2014) (Felicita, Chandrasekar and Shanthasundari, 2012) (Dinesh et al., 2013; Rubika, Felicita and Sivambiga, 2015), in vitro studies (Kamisetty et al., 2015) (Ramesh Kumar et al., 2011) (Sivamurthy and Sundari, 2016), literature updates (Krishnan, Pandian and Kumar S, 2015) (Vikram et al., 2017) (Viswanath et al., 2015) (Pandian, Krishnan and Kumar, 2018) and case reports (Felicita, 2017a) (Felicita and Sumathi Felicita, 2018) in the last five years. Now we are focussed on retrospective studies. Hence, a retrospective study was planned to evaluate the prevalence, gender and age distribution of habit breaking appliances used in the management of parafunctional oral habits.

MATERIALS AND METHODS
The present study was a cross sectional retrospective study done in a university setting. Ethical approval for this study was obtained from the Institutional Scientific Review Board. Case records of 44,100 patients were reviewed from the archives of patient records between June 2019 to March 2020. Patients with various parafunctional habits were segregated and those treated with different habit breaking appliances were noted. 26 patients with oral habits had undergone orthodontic treatment with habit breaking appliances. Samples were cross verified by another examiner to avoid any missing data. Sampling bias was minimised by excluding incomplete data. Details on habits and habit breaking appliances were tabulated in excel and were imported to statistical software SPSS (version 20). Descriptive statistics tests and chi square tests were performed to determine the statistical significance of the results obtained.

RESULTS AND DISCUSSION
Overall, 44,100 patients records were reviewed for the presence of any parafunctional habits. Parafunctional habits were reported in 570 patients. 85 patients had thumb sucking habits, 159 patients had tongue thrusting habits, 99 patients had lip biting, 227 patients had mouth breathing habits either alone or associated with other habits like bruxism. Among the patients with parafunctional habits, only 26 patients (4.56%) were treated with habit breaking appliances.

Vishnoi et al reported a significant difference in age wise prevalence of oral habits (Vishnoi et al., 2017) Anila et al reported thumb sucking was high in (4-8 yr) younger children compared to older children (9-13yrs) and mouth breathing more prevalent in males and females (Anila et al., 2018). Shetty and Munshi reported thumb sucking, pencil biting & tongue thrusting were prevalent highly across 3-6yrs, mouth breathing, bruxism in 7-12yrs, nail biting & cheek biting in 13-16yrs (Shetty and Munshi, 1998). Asopa et al reported tongue thrusting more prevalent in 11-13yrs (Asopa, Bansal and Sharma, 2015). Vishnoi et al reported tongue thrusting more prevalent in males and females (Vishnoi et al., 2017). Garde et al reported bruxism as most common in male and female (Garde et al., 2014).

In 6-12 yrs age group, 14 (53.85%) patients had tongue crib, 1 (3.85%) patients had Hawley's appliance with tongue crib, 4 (15.38%) patients had lip bumper, 2 (7.69%) patients had soft splint In the 13-18 yrs age group, 2 (7.69%) patients had tongue crib, 2 (7.69%) patients had Hawley's appliance with anterior bite plane, 1 (3.85%) patient had Hawley's appliance with tongue crib. Commonly used appliances in the 6-12 year age group was tongue crib whereas in the 13-18 year age group, tongue crib and hawley's appliance with anterior bite plane was used. The association between age groups and type of habit breaking
appliances was found to be statistically significant. (Chi square test; P value=0.021; < 0.05)(Figure 1). Sinem Tasman et al reported significant decrease in resting and swallowing pressures on crib appliance suggest tongue adaptation to new position by appliance(Taslan, Biren and Ceylanoglu, 2010).

In males, 10(38.46%) patients had tongue crib, 2(7.69%) patients had lip bumper, 1(3.85%) patients had hawley's appliance with anterior bite plane and soft splint. In females,6(23.08%) patients had tongue crib, 2(7.69%) patients had hawley's appliances with tongue cribs and lip bumper, 1(3.85%) patients had hawley's appliance with anterior bite plane and soft splint. Tongue cribs were the most prevalent habit breaking appliances in males and females. However, the association between gender and type of habit breaking appliances was not statistically significant (Pearson correlation: Chi square test; P value=0.581; > 0.05)(Figure 2) The findings from the present study add to the consensus of the previous study. However few studies contradict the present study because of different populations.

LIMITATIONS
Small sample size which does not provide results of the entire population Since it was a retrospective study, manual errors may occur during data collection. Further, multicentric studies with diverse populations can be done to determine the prevalence of parafunctional habits and usage of habit breaking appliances to actively intercept developing malocclusion.

CONCLUSION
This study concluded that the 1.29% of patients of the overall population had parafunctional habits. Among the patients with parafunctional habits, Nearly five percent of patients with various habits have been treated with habit breaking appliances. Thumb sucking was the most prevalent parafunctional habit among the patients treated with habit breaking appliances and tongue crib was the most commonly used habit breaking appliance. There was no significant association between gender and the type of appliance used for habit intervention.

AUTHOR CONTRIBUTIONS
All authors have equal contribution towards this research work

CONFLICT OF INTEREST
Nil

REFERENCES


Figure 1: Bar chart depicts the association between habit breaking appliances and different age groups. X axis denotes age distribution, Y axis denotes number of patients treated with various appliances. Chi square test was done and was statistically significant. (Pearson Chi Square=11.514, P value=0.021(< 0.05) All types of habit breaking appliances were commonly advised in the 6-12yrs age group than 13-18 yrs age groups. Commonly used appliances in the 6-12 years age group was tongue crib(yellow) whereas in the 13-18 years age group, tongue crib(yellow) and hawley's appliance with anterior bite plane (blue) was used.

Figure 2: Bar chart depicts the association between type of habit breaking appliances and gender. X axis represents gender distribution, Y axis represents number of patients treated with various appliances. Chi Square test was done and was found to be statistically not significant (Pearson Chi square=2.863, P value=0.581(>0.05). Tongue crib(yellow) was the most commonly used habit breaking appliance in males and females.