Abstract: Dental caries is the most prevalent disease of the oral health in school-aged children around the world. In the present study we aimed to analyse the factors associated with dental caries among 6 to 12 years old children visiting Private Dental Hospital. This study was designed as a retrospective study, conducted among patients who reported to the University Hospital. Subjects of age group 6-12 years, patient records with complete data were included in this study. Medically compromised patients and patients records with incomplete data were excluded from this study. Data was collected and tabulated in Excel and Data was analysed using IBM SPSS Statistical Analyser(23.0 version). Frequency distribution and descriptive analysis were carried out. The association between the variables was analysed and assessed using Chi-square test. p value less than or equal to 0.05 was considered to be statistically significant. Mean decay value was found to be higher in 6 years old and Mean DMFT value was found to be higher in 9 years old. These mean differences were statistically significant. Increased prevalence of dental caries was most commonly seen in maxillary molars and least in maxillary canines. Prevalence of dental caries was observed to be higher in children with more sugar consumption and irregular oral hygiene practices. Dietary factors and oral hygiene habits play significant roles in the prevalence of dental caries among school children.

Keywords: Dental caries, dietary factors, oral hygiene habits, school aged children.
data on the association of parents occupation and resident place with dental caries in children are limited.(Masood et al., 2012; Priya, Kumar and Saraswathi, 2018) Poor oral health literacy and dental neglect among caregivers also result in children’s poor oral health status.(Pratha and Prabakar, 2019; Samuel, Acharya and Rao, 2020). It is important to maintain low prevalence of caries among children by increasing awareness and promoting oral health care strategies.(And and Pradeep Kumar, no date; Vimalakshan, Gurunathan and Kumar, 2019) 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; Ezhillarasan, 2018; Ezhillarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J et al., 2018; Menon et al., 2018; Prabakar, John, Arumughan, Kumar and Sriskanthi, 2018; Rajeshkumar et al., 2018, 2019; Vishnu Prasad et al., 2018; Wahab et al., 2018; Dua et al., 2019; Duraisamy et al., 2019; Ezhillarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhillarasan, 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)

The aim of this study was to analyse the factors associated with dental caries in children aged 6-12 years visiting a private dental hospital in Chennai. The considerate potential risk factors observed in this study were oral hygiene habits and dietary factors.

MATERIALS AND METHODS

This study was designed as a retrospective study, conducted among subjects reported to the dental hospital. After obtaining approval from the institutional ethical committee, the dental records of patients who reported to the dental hospital between June 2019 to March 2020 were assessed for eligibility to be included in the study. A total of 86,000 patient records were screened for eligibility by the principal investigator based on the following inclusion and exclusion criteria.

Inclusion criteria:

- Subjects belonging to age group 6-12 years
- Subjects who had at least one decay
- Patient records with complete data regarding the general examination, clinical examination, preoperative findings and observations and treatment records were included.

Exclusion criteria:

- Medically compromised patients
- Patient records with incomplete data were excluded.

A total of 350 records which satisfied the inclusion and exclusion criteria were included in the study. From the pre operative and post operative records of the study population, data such as age, gender, DMFT data, oral hygiene habit, dietary intake records were obtained. The data was analysed by IBM SPSS Statistical Analyzer(23.0 version). Frequency distribution for categorical variables and descriptive analysis for quantitative variables were carried out. The association between the variables were analysed and assessed using Pearson Chi-square test. p value less than 0.05 was considered to be statistically significant.

RESULTS AND DISCUSSION

The study included 350 participants with dental caries of the age group 6-12 years. The demographic distribution of the study population with dental caries according to age and gender was found. Among the study population, 5.71% of males and 7.71% of females were six years old, 8% of males and 6.57% of females were 7 years old, 8.86% of males and 7.43% of females were 8 years old, 7.71% of males and 4.86% of females were 9 years old, 10.57% of males and 8.29% of females were 10 years old, 6.29% of males and 7.71% of females were 11 years old, 5.71% of males and 4.57% of females were 12 years old children with dental caries(Figure 1). The mean and standard deviation of decay value were calculated. One-way ANOVA test was done to find the association between mean Decay value and different age. Statistically significant correlation was found between decay value and different age with p value=0.054 which is equal to 0.05. The mean difference between decay value and age is presented in (Figure 2). The mean decay value for 6 years old is 5.81, 7 years old is 4.45, 8 years old is 4.35, 9 years old is 4.86, 10 years old is 3.58, 11 years old is 4.06 and 12 years old is 4.69. The mean decay value was found to high in 6 years old. The mean and standard deviation of DMFT value were calculated. One-way ANOVA test was done to find the association between mean DMFT value and different age. Statistically significant correlation was found between DMFT value and different age with p value=0.049 which is less than 0.05. The mean difference between DMFT value and age group is presented in (Figure 3). The mean DMFT value for 6 years old is 6.70, 7 years old is 6.10, 8 years old is 5.95, 9 years old is 7.14, 10 years old is 5.76, 11 years old is 6.61 and 12 years old is 6.36. The mean DMFT value was found to high in 9 years old. In Terms of commonly affected teeth by dental caries, 58.29% of maxillary molars followed by 36.29% of mandibular molars, 3.71% of maxillary incisors, 1.14% of mandibular incisors and 0.57% of maxillary canines were found to be affected by dental caries among the study population(Figure-4). With regards to sugar consumption, increased prevalence of dental caries was found in children with more sugar consumption.
compared to children with less sugar consumption 15.43% (Figure-5). Considering the brushing frequency, 83.43% of patients who brushed their teeth once everyday and 16.57% of patients who brushed their teeth twice everyday were affected by dental caries (Figure-6).

Early detection of caries is one of the important steps in modern dentistry to create awareness among the community. In epidemiological studies, DMFT is the most commonly used index for caries assessment. The result of the present study showed that mean DMFT value was higher in 9 years old. This is in agreement with the results of the study conducted by Yabao et al where prevalence of dental caries in primary dentition was found to be 71.7% and they concluded in their study that as age increased the mean DMFT increased. (Yabao et al., 2005) Most of the carried out studies have investigated the tooth caries among children at two age groups: less than or equal six and twelve or higher years. This present study has provided data on the prevalence of dental caries and associated risk factors at mixed dentition stage among 6-12 years old children. He caries prevalence was significantly higher in children who brushes their teeth once daily and consumes more sugar substitutes. This is in accordance with the results of numerous published studies including Dawkins et al concluded in their study that inappropriateness of oral hygiene practices among children attributes to higher dental caries prevalence. (Dawkins et al., 2013)

In this present study we observed that prevalence of dental caries was higher in females than males. This result was in line with the study conducted by Darwish W et al who stated in their study that prevalence of caries in girls was significantly higher than that in the boys. This may be attributed to the permanent teeth that erupt earlier in girls than boys. Therefore, being exposed to influent factors for longer time could raise the caries prevalence among the girls. (Al-Darwish, El Ansari and Bener, 2014) From the present data, it is seen that factors such as oral hygiene habits and dietary factors play major roles in dental caries prevalence. Veiga concluded that uncontrolled consumption of processed foods which are rich in sugar does not bring particular health benefits, it certainly played a role in the onset of caries. (Veiga, Pereira and Amaral, 2015) Marshall et al in their study stated that escalation in caries prevalence has been reported in association with sugar added foods and sugary drinks ingestion. (Marshall et al., 2005) Wulaerhan et al stated that brushing frequency and dietary factors play prominent roles in the prevalence of dental caries in mixed dentition stage. (Wulaerhan et al., 2014) Ingle NA et al concluded in their study that caries prevalence was higher in children who brushed once daily were highly attributed towards dental caries. (Ingle et al., 2014)

In contrast, Ismail et al disagreed over the impact of sugar consumption on high dental caries prevalence. (Kumar et al., 2017) Hillson et al in their study found no difference in the risk of developing carious lesions when children brushes once in a day. (Hillson, 2008) Regardless, all data points to higher prevalence of dental caries in children with inappropriate oral hygiene routine and children with more sugar consumption. 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; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; Vijayashree Priyadharsini, 2019; M. G. Mathew et al., 2020)

Fig. 1: Bar graph represents the demographic distribution of the study population with dental caries based on age and gender. X-axis represents the age group and Y-axis represents the number of participants. Among the study population, increased prevalence of dental caries was seen in children aged 10 years constituting 10.57% of males (blue) and 8.29% of females (green) compared to children of other age.
Fig. 2: This bar graph depicts the association between age and mean decay value. X-axis represents the age group and Y-axis represents the mean decay value. The mean decay value was found to be higher (5.089) in 6 years old children (red) compared to children of other age. One way Anova test was done p value = 0.054. The association between age and mean decay value is statistically significant.

Fig. 3: This bar graph depicts the association between age and mean DMFT value. X-axis represents the age group and Y-axis represents the mean DMFT value. The Mean DMFT value was found to be higher (7.136) in 9 years old children (red) compared to children of other age. One way Anova test was done p value = 0.049. The association between age and mean DMFT value is statistically significant.
Fig. 4: This bar graph represents the distribution of most commonly affected teeth by dental caries. X-axis represents the most commonly affected teeth and Y-axis represents the number of patients. 58.29% of maxillary molars (blue) followed by 36.29% of mandibular molars (red), 3.71% of maxillary incisors (green), 1.14% of mandibular incisors (grey) and 0.57% of maxillary canines (beige) were found to be affected by dental caries among the study population.

Fig. 5: This bar graph represents the prevalence of dental caries based on the sugar consumption of the study population. X-axis represents the sugar consumption and Y-axis represents the number of patients. Increased prevalence of dental caries was found in children with more sugar consumption (blue) 84.57% compared to children with less sugar consumption (green) 15.43%.
CONCLUSION
Within the limitations of the study, it can be concluded that mean decay value was higher in 6 years old and mean DMFT value was found to be higher in 9 years old. These mean differences were statistically significant. Prevalence of caries were found to be higher in maxillary molars followed by mandibular molars and least in maxillary canines. Increased prevalence of dental caries was seen in children with more sugar consumption and who brush their teeth once everyday. Therefore, proper oral hygiene practice and dietary factors play vital roles in the prevalence of dental caries among children of age group 6-12 years. However due to small sample size, studies with large sample size are required to be conducted for further analysis among different population.

REFERENCES
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