INTRODUCTION

The congenital absence of one or more teeth is a dental anomaly that frequently occurs in the world’s population with a wide variability of distribution as compared to various other developmental abnormalities. Tooth agenesis refers to the developmental failure of a tooth which could be further classified into anodontia or partial anodontia (Affan and Serour, 2014).

Anodontia is the total absence of the tooth development in primary or permanent or both dentition. Partial anodontia is known as the lack of development of one or more teeth. It may be further divided into two types which is known as oligodontia and hypodontia. Oligodontia is termed as a rare developmental dental anomaly in humans characterised by the absence of six or more teeth, whereas hypodontia is defined as the developmental absence of one or more teeth excluding the third molars. It is one of the most common dental anomalies and has a negative impact on both esthetics and function (Acek and Gjorgova, 2014).

Various causes of tooth agenesis may be due to genetic diseases like cleft lip / palate, down’s syndrome etc; or due to non-syndromic agenesis like gene mutations especially genes such as (MSX1 and PAX9). Diseases such as syphilis, birth injuries pregnancy illness and traumatic injuries are also considered to be various other contributing factors for tooth agenesis (Bailleul-Forestier et al., 2008).

Absence of lateral incisors may cause a variety of esthetic and functional problems like midline diastema, spacing between permanent incisor and canine, mesial migration of canine, midline shift in case of unilateral missing tooth (Chung, Han and Kim, 2008, p. 4). The definitive diagnosis is required which can be achieved by radiographic examination and reviewing dental records in order to confirm the assumed diagnosis.

Many studies had evaluated the prevalence of congenitally missing lateral incisors among various populations previously (Cozzani, Lombardo and Gracco, 2011). Moreover, treatment protocols for missing lateral incisors is complicated and a challenging process, which demands interaction with several dental specialties. The aim of this study was to estimate the prevalence and gender distribution of congenitally missing maxillary lateral incisors among 10000 patients in an institutional set-up. Dental records and radiographs were retrospectively examined for the presence of missing maxillary lateral incisors. Data was retrieved from the dental case records of Saveetha Dental College, Chennai. Details like age, gender, absence of missing lateral incisors may be unilateral (or) bilateral were retrieved from the source and analysed. Lesser prevalence rate of missing maxillary lateral incisors among the examined population (n=10,000) was found.

Abstract: Tooth agenesis refers to the developmental failure of a tooth and could be classified into anodontia or partial anodontia. It is more frequently observed on the permanent dentition with more frequency for the upper arch than in lower arch. Many studies had evaluated the prevalence of congenitally missing lateral incisors among various populations previously. The main aim of the study is to assess the prevalence and gender distribution of congenitally missing maxillary lateral incisors among a sample of 10000 patients in an institutional set-up. Dental records and radiographs were retrospectively examined for the presence of missing maxillary lateral incisors. Data was retrieved from the dental case records of Saveetha Dental College, Chennai. Details like age, gender, absence of missing lateral incisors may be unilateral (or) bilateral were retrieved from the source and analysed. Lesser prevalence rate of missing maxillary lateral incisors among the examined population (n=10,000) was found.

Keywords: Maxillary lateral incisors, Prevalence, Permanent teeth, Tooth agenesis.
MATERIALS AND METHODS
This study was planned in a university set up among the patients under the age group of 18 to 30 years who visited Saveetha Dental College for dental check up. Before scheduling the retrospective study the official permission was acquired from the Institutional ethical committee (ethical approval number - SDC/SIHEC/2020/DIASDATA/0619-0320).

Data collection
A total of 10000 patients were selected with a simple random sampling technique. Case reports of the patients were retrieved and reviewed from the archives of Saveetha Dental College. Incomplete case records were excluded from the study, a retrospective study was done based upon the available dental records from June 2019 to March 2020. Details like age, gender, absence of missing lateral incisors may be unilateral or bilateral were retrieved from the source and analysed.

RESULTS AND DISCUSSION
Various studies assessed the prevalence rate of congenitally missing teeth and missing lateral incisors among different study populations. There are several studies in which researchers have attempted various clinical trials for advanced orthodontic diagnosis, treatment planning, and in vitro studies were done and assessed based on various recent advances in orthodontic management and in vitro studies were done and assessed based on various recent advances in orthodontic management. There have been several studies in which researchers have attempted various clinical trials for advanced orthodontic diagnosis, treatment planning ([Sivamurthy and Sundari, 2016],[Samantha et al., 2017],[Krishnan, Pandian and Kumar S, 2015],[Vikram et al., 2017],[Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma et al., 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi et al., 2020; Samuel, Acharya and Rao, 2020])

Prevalence of congenitally missing maxillary lateral incisors among males was higher than females in our study. Among the total of 10000 patients, 67 patients had missing total incisors under the age group of 18 to 30 years. Figure 1 represents the frequency of distribution of patients with missing maxillary lateral incisors, which shows that 52 patients (77.61%) had unilaterally missing maxillary lateral incisors whereas, 15 patients (22.39%) had bilaterally missing maxillary lateral incisors. Whereas, 15 patients (22.39%) had bilaterally missing maxillary lateral incisors. Among males, 41 patients (61.19%) had unilaterally missing maxillary lateral incisors and 7 patients (10.45%) had missing maxillary lateral incisors bilaterally. Among females, 11 patients (16.42%) had unilaterally missing maxillary lateral incisors, whereas, 8 patients (11.94%) had missing maxillary lateral incisors bilaterally. Therefore, the overall prevalence for congenitally missing maxillary lateral incisors in chennai population.

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Prevalence of congenitally missing maxillary lateral incisors among males was higher than females in our study. Whereas, Batool and Ahmed et al, Maniet et al did not report the gender distribution and association with missing lateral incisors. Yet, Nazi et al and Pinho et al had reported that females were more frequently affected which was a contradictory literature compared to this study ([Shimizu and Maeda, 2009],[Muller et al., 1970]). Numerical studies evaluated the prevalence of hypodontia in orthodontic patients whereas, in this study the prevalence of lateral incisor agenesis in both non-orthodontic and orthodontic patients were analysed ([Endo et al., 2006]).

Higher prevalence rates have been reported in other studies. But, in our study there was a lesser prevalence rate of missing maxillary lateral incisors because other studies are restricted and taken up only for orthodontic patients ([Bäckman and Wahlin, 2001]).

Therefore, this study provides useful information and statistics regarding upper lateral incisor agenesis among chennai population and helps dental professionals to learn more about the prevalence of maxillary lateral incisor
agensis and emphasizes the importance of early diagnosis and referral to reduce or prevent a number of complications that may affect the function and esthetics ([Baccetti, 1998]).

Still this study has limitations as it is a retrospective study, and only representatives of the patient pool at one institution in Chennai. Wider population groups should be studied in Chennai in order to draw more accurate results like several other studies which had taken and assessed larger study samples in their research ([Dinesh and Saravana Dinesh, 2013],[[Felicia, 2018]],([Rubika, Sumathi Felicita and Sivambiga, 2015]). 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; Mathew et al., 2020).

Fig. 1: Bar graph represents frequency of distribution of patients with unilateral and bilateral missing of maxillary lateral incisors. X axis represents missing maxillary lateral incisor (unilateral or bilateral). Y axis represents the frequency distribution of patients with congenitally missing lateral incisors. Frequency distribution of unilaterally missing maxillary lateral incisors (blue) was higher as compared to bilateral (red).

Fig. 2: Bar graph represents the association between gender distribution among the patients with congenitally missing maxillary lateral incisors. X axis represents gender distribution. Y axis represents the number of patients with missing lateral incisors. Unilaterally missing maxillary lateral incisors (blue) were more among both males and females as compared to bilaterally missing maxillary lateral incisors (red). Chi square value: 5.934; p-value = 0.015 which was considered to be statistically significant.
CONCLUSION
Overall prevalence of congenitally missing maxillary lateral incisors was less. Association of congenitally missing maxillary lateral incisors with gender reveals males had higher prevalence of missing lateral incisors than females. The frequency of distribution of unilaterally missing maxillary lateral incisor was prevalently higher than bilaterally missing maxillary lateral incisor among the selected population.

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REFERENCES
research: official publication of Indian Society for Dental Research, 24(4), pp. 456–463.
controlled trial’, Clinical oral investigations, 23(9), pp. 3543–3550.