Association between Tobacco Dependence and Tooth Loss among Patient Visiting Private Dental College And Hospital-A Cross-Sectional Study

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ABSTRACT

Oral health contributes to personal wellbeing and quality of life. Use of tobacco in smoke or smokeless form is one of the driving reasons for global mortality. Also, it plays a major role in causing morbidity of major non-communicable diseases, including tooth morbidity in the form of periodontitis and tooth mortality. Therefore, the aim of the study is to find out the prevalence and association of nicotine dependence and tooth loss. A retrospective study was done using the case records of outpatients attending a private Dental College and Hospital. One month case records with a total of 100 case sheets of current smoker males were retrieved. Case sheets which recorded nicotine dependence using the Fagerstrom Test for Nicotine Dependence (FTND) and the number of tooth loss were used for data analysis. Descriptive and chi-square association were the statistical tests done. Patients of age more than 45 (27%) have a lesser dependency for the tobacco of 22.2% when compared to 15 to 30 years (39%) have tobacco dependency of 50%. In between lies the age group of 30-35 years (34%) had tobacco dependency of (27.7%), and there was no statistically significant association between level of nicotine dependency and tooth loss (P>0.05). Patients with high nicotine dependency of age 15-30 years had minimum tooth loss than patients of age more than 45 years with a low level of nicotine dependency.

INTRODUCTION

In developing countries like India, mass disasters in terms of mortality and morbidity occur due to use of tobacco. The oral cavity is prone to many diseases like Dental caries are a lifetime disease, and the highest priority risk group is school children. Early childhood caries (ECC), fluorosis, pit and fissures are approximately eight times more vulnerable than the smooth surface caries lesion. S. mutans is a primary colonizer and is considered the primary etiologic agent for caries development (Mathew, 2020). So the Dentists should be aware of the benefits of the phytochemicals and should be able to advise patients on how their nutrition can improve their overall quality of life. The oral health status also depends on the diet we consume day to day. Malnutrition and tobacco usage in oral cancer patients leads to poor response to treatment and reduced quality of life.

Tobacco always remains as a single largest cause for non-communicable diseases such as heart disease and stroke in India, with more than one million deaths per year by adverse addictive
behaviour (GBD 2016 Traumatic Brain Injury and Spinal Cord Injury Collaborators, 2019) According to the Global Adult Tobacco Survey (GATS), India 2010 the prevalence of tobacco use among Indian adults is 35%. Smoking tobacco in the form of cigarettes or bidi is a common practice in India and major chewing from is a pan with tobacco, Nicotine, an alkaloid is mainly accountable for addiction, which along with tobacco-specific nitrosamines, polycyclic aromatic hydrocarbons and much other act as potent carcinogens (Kumar, 2015). Also India faces an enormous Economic burden for treating tobacco-related disease amounts to $907 million for smoked tobacco and $285 million for smokeless tobacco (Mehta, 2018). With increasing measures of tobacco control (surveillance and Monitoring, tobacco control policy and legislation, capacity building) by the Government of India. Still, prevention of smoking remains a major challenge to achieve sustainable development goals (World Health Organization, 2009). Nicotine dependence causes both physical and mental dependence. It is an interminable and relapsing ailment. This dependence is a long dragging issue with more number of relapses which makes the necessity for rehashed intercession (Li, 2014).

The improvement from the hazard varies from individual to individual. Oral health contributes to personal wellbeing and quality of life. It plays an essential role in the pursuit of health. Oral disease bothers humans of all ages and pragmatically no individual in the course of their lifetime dental or oral disease (Singh, 2016). Oral cavity is prone for a myriad of changes with advancing age and also numerous environmental and lifestyle-related factors such as unhealthy diet, tobacco use etc. Many epidemiological studies have exhibited the link between smoking and periodontal attachment loss. Though gingival appearance with less bleeding in smokers is disease marking and also paper as hardened as compared to that of nonsmokers due to vasoconstriction property of Nicotine, advanced periodontitis could be happening due to underlying inflammatory processes (Gross, 2017).

Though the prevalence of the type of tobacco use and nicotine dependence is evident in Chennai district of Tamil Nadu, few studies have assessed the association between nicotine dependence and a number of tooth loss due to periodontitis. Hence, the present study was contemplated with an aim to determine the association between nicotine dependency and a number of tooth loss.

**MATERIALS AND METHODS**

**Study setting and sample selection**

The present retrospective study was conducted by reviewing 86000 patients’ records from July 2019 to March 2020, visiting our University Hospital. Among them, 100 case records of patients aged 15-75 years with nicotine dependency and tooth loss were retrieved.

**Ethical approval**

Ethical clearance was obtained from the Institutional Review Board (IRB) of the University to use the data from case records. The Informed consent was obtained from the patient at the time of the screening procedure; Case sheets with Informed consent were included in the study.

**Screening**

The screening for each subject included a detailed record of the patient’s demographic details such as name, age, gender, mobile no, residential location, oral health status, oral health practice.

**Inclusion and Exclusion criteria**

Case records of the patients who were current smokers, who use tobacco more than once daily; and with no history of periodontal treatment for the past 6 months and only male patients were included in the study. Any case records with chronic systemic disease that affects periodontal health and with nicotine replacement therapy were excluded from the study.

**Data Retrieval**

Patient ages in years were recorded from the digital case sheets. Age of the patients was categorized into Group 1 (15-30 years) Group 2 (30-45 years) Group 3(>45 years) for statistical purposes. Nicotine dependence score (Heatherton, 2013) and the number of tooth loss was recorded.

**Examiner Calibration**

Each patient was examined by every single well-trained examiner (Inters/postgraduate students) at the time of screening.

**Statistical Analysis**

Data was entered into the Microsoft Excel spreadsheet, and analysis was done using Statistical Package for Social Science (SPSS) version 23.0. Descriptive statistics were used for data summarization and presentation, and chi-square test association were used for the analysis of the association between the study variables. The level of statistical significance was set at a value of P<0.05.
RESULTS AND DISCUSSION

Most of the participants were in the age group of 15 to 30 years (39%), followed by 30 to 45 years (34%) and >45 years where 27% is shown in Figure 1. The X-axis shows age groups in years. Y-axis shows the proportion of age groups.

The data clearly reveals that almost 50% of the participants were smoking tobacco in the form of cigarettes or bidi irrespective of their age. Group 1, 42.8% had low levels of dependency. Most of the participants of the Group 1 category (15 to 30 years) had a loss of 0 - 5 teeth were 41.3%, loss of 6 - 10 teeth was 16.6%. Group 2 category of 30 to 45 years, 34.7% had 0-5 teeth loss, and 33.3% had lost 6 to 10 teeth. Group 3 category of >45 years, 23.9% had lost 0-5 teeth, 50% had lost 6-10 teeth, and 27.1% had lost 11 to 15 teeth, as shown in Figure 2.

The number of tobacco use and years of daily use may be an indicator for nicotine dependence, even though group 1, had less than 5 years of habit, almost 50% had a high level of nicotine dependency and the level of dependency may increase further if the habit continues, which oppose the study findings which shows the relationship between the number of cigarette per day and years smoking and the severity of the nicotine dependency stated that there exists a statistically significant association between them (Donny, 2008; Gross, 2017). One study among U.S. male health professionals stated that the risk for tooth loss reduced with increased time since tobacco cessation (Dietrich, 2007).

Another study showed that current smokers have the highest prevalence of moderate to severe periodontitis and >5 teeth compared to former and non-smoker (Albandar et al., 2000).
the increased risk of tooth loss among smokers (Ylostalo et al., 2004). Associations have been reported between cigarette smoking and root caries (Fure, 2004; Phelan, 2004), coronal caries (Axelsson et al., 1998) endodontic treatment (Krall, 2006), and periapical periodontitis; (Kirkevang and Wenzel, 2003), although not consistently (Bergstrom et al., 2004).

Figure 4: The X-axis shows nicotine dependence scores.

A Cross-section study conducted in India among 800 males also stated that individuals with high nicotine dependency had a high prevalence of periodontitis (Goyal, 2019). In contrast with the above studies, the present study which analyzed the association between nicotine dependence and the number of tooth loss due to periodontal diseases had shown no statistical significance. All those studies measured periodontitis in terms of pocket depth, clinical loss of attachment, whereas the present study assessed the number of tooth loss where the reliability becomes questionable. Local factors (plaque and calculus); poor oral hygiene would play a role in tooth loss more than the nicotine dependence by itself. There are certain limitations in the present study which attributes to the study design. Further longitudinal prospective studies with standardized measuring instruments are needed to extrapolate the study result. Dentists should play an important role in curbing tooth loss among tobacco users by inculcating tobacco cessation counselling.

CONCLUSIONS

Nicotine dependency plays a vital role in periodontal health and tooth loss, though there is no significant association between nicotine dependence and number of tooth loss; individuals with nicotine dependence have more number of tooth loss. Dentists should play a major role among tobacco users by insisting on the harmfulness of tobacco use on oral or general health by including tobacco association counselling.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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