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**TRENDS IN FREQUENCY AND DURATION OF TOBACCO HABIT IN
RELATION TO PREVALENCE OF POTENTIALLY MALIGNANT
LESIONS AMONG PATIENTS ATTENDING A PRIVATE DENTAL
INSTITUTION**

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ABSTRACT

BACKGROUND:

Tobacco use is one of the most prevalent forms of deleterious habits, associated with ill health in individuals. Smoking and chewing smokeless tobacco are considered to be significant risk factors for the development of oral cancer, premalignant lesions such as leukoplakia, and other lesions that include smoker's melanosis, nicotinic stomatitis and non scrapable white lesions.

AIM

Hence the current retrospective analysis was done to assess the trends and frequency in relation to smokeless and smoking forms of tobacco.

MATERIALS AND METHOD

This hospital-based retrospective study from June 2019 - June 2020. A total of 86000 case records were reviewed and constricted to 100 samples. All the patients with the history of

cigarette and smokeless tobacco habits were included in the study. The data included the patient's demographic details, the type of habit, duration, frequency, and the associated oral mucosal pathology. Data was analysed using SPSS software.

RESULTS

Analysis of the data revealed that; 3.9 % of the men had frictional keratosis and tobacco pouch keratosis , 2.0% of the males had OSMF and chewers mucositis while the 89.1 % of males did not have any malignancies. A chi square test was done and P value less than 0.05 was considered statistically significant.

CONCLUSION

This study proves a definite association between smokeless tobacco habit and prevalence of Oral premalignant lesions.

Keywords: Malignancies; Out patients; Smoking; Smokeless forms; Dependency; Trends

INTRODUCTION

Oral cancer is one of the most common cancers in the world due to over consumption of tobacco and cigarettes and is one of the most debilitating and disfiguring of all malignancies. It can be smokeless forms and smoking cigarettes. There is a higher incidence of cancer in south India than in any other part of the country. The people affected are from all walks of life, Illiterate people, daily wage workers, and many IT employees are addicted mainly to smoking form of tobacco. Asthana (2016) Tobacco has been traditionally chewed in India as an ingredient of betel quid or pan, which is a combination of betel leaf, arecanut, slaked lime and chewing form of tobacco, where as in rural areas and among lower socio economic groups, A hand role in a dry tembhurni leaf

filled with tobacco bidi widely used as an alternative to cigarette [1].

Speight (2018) Oral potentially malignant disorders (OPMDs) [2] is another area which needs attention, they have a statistically increased risk of developing cancer, but the risk varies depending on patient- or lesion-related factors. It is difficult to predict the risk of progression in any individual patient, and the clinician must decide based on assessment of each case. Alshayeb (2019) The most commonly encountered oral potentially malignant lesion is leukoplakia, but others, including lichen planus, oral submucous fibrosis, and erythroplakia [3]. Factors associated with an increased risk of malignant transformation include gender, site and type of lesion, habits, such as smoking

and alcohol consumption; and the presence of epithelial dysplasia on histologic examination. Majority of oral cancers consist of OSCC which arise from epithelium of oral mucosa. Malignant transformation of leukoplakia is 3-6%, followed by Oral Submucous fibrosis, Erythroplakia, smoker's melanosis and others.

Prabakaran, Kumar RP (2016, 2018) Previously our team has conducted numerous clinical trials [4–8] Samuel, Sri Sakthi, Kumar RP, Mathew (2020, 2018, 2017) cross sectional studies like [9–13] and Khatri, Mohapatra, Harini, Neralla ((2019) in vitro studies [14–18] over the past 5 years. Now we are focussing on epidemiological and retrospective studies, in order to form a baseline data, which would make a foundation for future evidence based studies, we attempt to identify important risk factors and present a simple algorithm that can be used as a guide for risk assessment at each stage of the clinical evaluation of a patient. Many patients with these lesions will not have a specific diagnosis, and the lesions must be managed as leukoplakia. Although these disorders have an increased statistical risk of malignant change, it is very difficult to predict the outcome for an individual patient.

A hospital with a Tobacco cessation center is an ideal unit for analysis of patients with varying degrees of habit and pathology, hence it was chosen as a study setting of choice and the current study was done with an aim to assess the trends and frequency in relation to smokeless and smoking forms of tobacco.

MATERIALS AND METHOD

Study design and study population

This is a retrospective analysis which included patients who visited Saveetha Dental College from a period of June 2019-June 2020. Patients with cigarette and smokeless form of tobacco habits were included in this study. A written Informed consent was obtained from patients during the treatment, stating the purposes for which their data might be used in future. The inclusion criteria were, patients who used any form of tobacco, presence of lesion and the exclusion criteria was, patients who were not willing for study and patients with any systemic conditions.

Sample size and Quality control

The sample size was 100 after reviewing 86000 case records of patients. This study consisted of males belonging to the age group of 20-60 years. In case of doubt the data were cross verified through telephone. As a measure of quality control, two

investigators cross verified the patient record with photographs available in each patient's case gallery.

Approval

Prior to the start of the study, Ethical approval was obtained from the scientific review board of Saveetha University. {SIHEC/2020/DIASDATA/0619-0320}

Data collection

The particulars of interest retrieved from the database were, forms and frequency of tobacco usage, malignant / premalignant oral lesions associated with the tobacco habit (verification was done with pictures in the patient gallery), along with basic demographic details.

Statistical analysis

The data collected were segregated according to age, categorized and added in excel sheets. The data in excel sheets were then transferred to SPSS software for statistical analysis. Chi square test was done between age and habit, smoking frequency and malignancy, dependencies and malignancies. Any P value less than 0.05 was considered statistically significant. The results obtained were tabulated and represented graphically.

RESULTS AND DISCUSSION

Among the 100 study subjects included in the analysis, the majority (34.0%) belonged to the age group 20- 30 years followed by

20.0% each in the 40-50 years and 50-60 years age group Majority of the study population belonged to the age group of 20-30 years (**Figure 1**). 28.0% of the tobacco users belonging to the age group of 20-0 years were healthy and 2.0% had oral submucous fibrosis, frictional keratosis lichenoid. 20.0% of the tobacco users of the age group 30-40 years were healthy,2.0% had chewers mucositis, leukoplakia and tobacco pouch keratosis. 18.0% of tobacco users belonging to the age group of 40-50 were healthy,and 2.0% had tobacco pouch keratosis. 18.0% of the tobacco users belonging to the age group of 60-70 years were healthy and 2.0% had frictional keratosis (**Figure 2**). 24.0% of cigarette smokers, 6.0% of pan chewers, 2.0% of gutka and Paan chewers and cigarette smokers belonged to the age group of 20 to 30 years. 20.0% of cigarette smokers, 4.0% of pan chewers and 2.0% of gutka consumers belonged to the age group of 30 to 40 years. 20.0% of cigarette smokers, 4.0% of pan chewers and 2.0% of gutka consumers belonged to the age group of 30 to 40 years. 18% of cigarette smokers and 2% of pan chewers belonged to the age group of 40 to 50 years. 20.0% cigarette smokers belonged to the age group of 50 to 60 years Majority of them smoked cigarettes than any other forms

of tobacco (**Figure 3**). 26.0% smokers with a dependency of 1- 3 (very low dependence) were healthy and 2.0% smokers had frictional keratosis. 38.0% smokers with a dependency of 3 to 6 (moderate dependence) were healthy, 2.0% smokers had chewers mucositis, leukoplakia and frictional keratosis smokers who had dependency of 7 to 10 (very high dependence) had 20.0% when healthy, 4.0% had tobacco pouch keratosis and 2.0% had oral submucous fibrosis and lichenoid. Most of the smokers who used smokeless forms and cigarettes had a healthy oral environment when compared to other oral malignancies (**Figure 4**). ANOVA test based on nicotine dependence and oral malignant and pre malignant lesions among the study population was done, which was not significant statistically, implying that the dependency of patients is not associated with their risk of acquiring a lesion in the oral cavity. [P=0.197>0.05]

Oral cancer is one of the 10 most common cancers in the world and shows marked geographic differences in occurrence. Oral cancer ranks number one among men and number three among women. The social customs, habits, nutritional state, and the climatic conditions vary remarkably in different parts of the globe, and even in different sectors of the big country in India.

Nirmala (2017) Local habits are thought to play a distinct role in the high rate of oral and pharyngeal cancer in India [19]. An increased frequency of cancer in the oral cavity was more often associated with the habit of the chewing of tobacco with betel leaf, betel nut, and slaked lime than with other habits, whereas in persons suffering from carcinoma of the oropharynx and of the hypopharynx there was evidence of an increase in the frequency of tobacco smoking. The Indian data suggest that the relative risk of developing oral cancer is 2.82 for smokers and 5.98 for chewers.

The use of tobacco in various forms is widespread in India, with between 47% and 73% of the population indulging in the habit, compared with approximately 36% in the United States. Joshi (2016). The rate of transformation of precancerous lesions into oral cancers is similar to that seen [20] elsewhere, suggesting that the high incidence of oral cancer in India is not a reflection of a unique susceptibility but simply of the very high prevalence of tobacco use. Studies have shown that almost 80% of oral cancers progress from precancerous lesions and about 2-12% of precancers are transformed into cancer.

In our study, out of 100 cases, 6 patients had a high malignancy rate, 4 patients had

moderate malignancy, 6 patients had a low risk, this was different from the study by Kavitha Nitish Garg et.al, where 101 cases had high malignancy rate and 35 questionable risks. Garg(2013) Tobacco users with high malignancy rates were less when compared to KN Garg study and also showed that our study population had a lesser malignant transformation percentage [21].

In this study, occurrence of oral malignant lesions was 0.122 and this was almost similar to a study by Kaverihallikeri *et al*, odds of occurrence of OMLS was 0.218. Hallikeri (2018). The low prevalence of malignant lesions in both studies could be attributed to the nature, duration and frequency of tobacco products used and mainly the predominant young age in both the study population [22].

In this study, out of all premalignant lesions, tobacco pouch keratosis was most prevalent (4.0%) which was again different from the study by Ban cozy *et al*, which reported higher prevalence rate of leukoplakia among smokers. Again the factors such as age, form and duration of habit would have contributed

to this difference. Our study had 2.0% tobacco users with leukoplakia which is comparatively less. Intervention studies show a regression of the lesion after stopping the smoking habit. Creath (1991) Studies show almost 80% of oral cancer progress from precancerous lesions and about 2-12% of precancerous lesions are transformed to cancer, thus implying the importance of such baseline analysis to tailor the cessation to individual patients and for addressing the community [23]. The current study fails to throw light on so many intricate details which would affect the compliance and thereby reduce the malignant transformation risk. The age wise distribution of study subjects were not equal, there was a predominance of young people, making the age wise comparison difficult. Same can be concluded about the lesions in the study population, where the majority of them were healthy. A prospective study with equal distribution in terms of age and dependency would help us arrive at generalizable results.

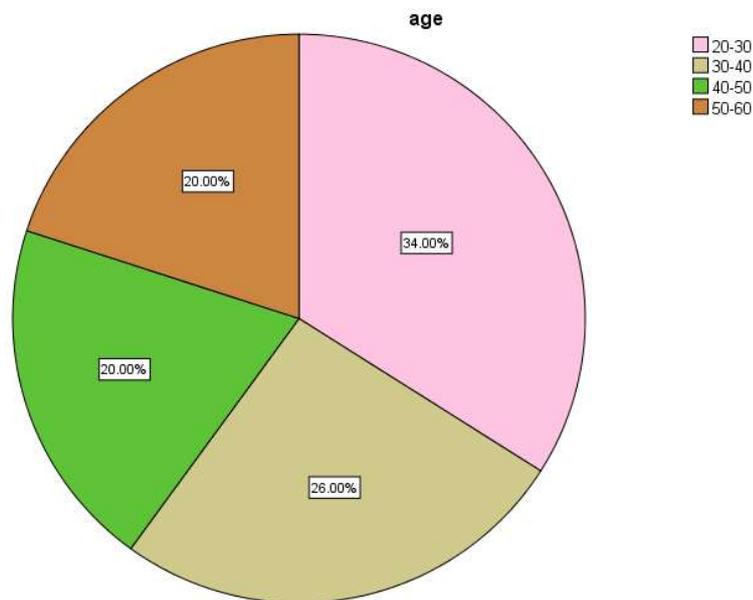


Figure 1: A pie chart representing the age wise distribution of study population. 34.0% of the patients belonged to 20-30 years (pink) , followed by 26.0%, who belonged to the age group of 30-40 years (beige). 20.0% of them belonged to the age group of 40-50 (green) years and 50-60 years (brown) respectively.

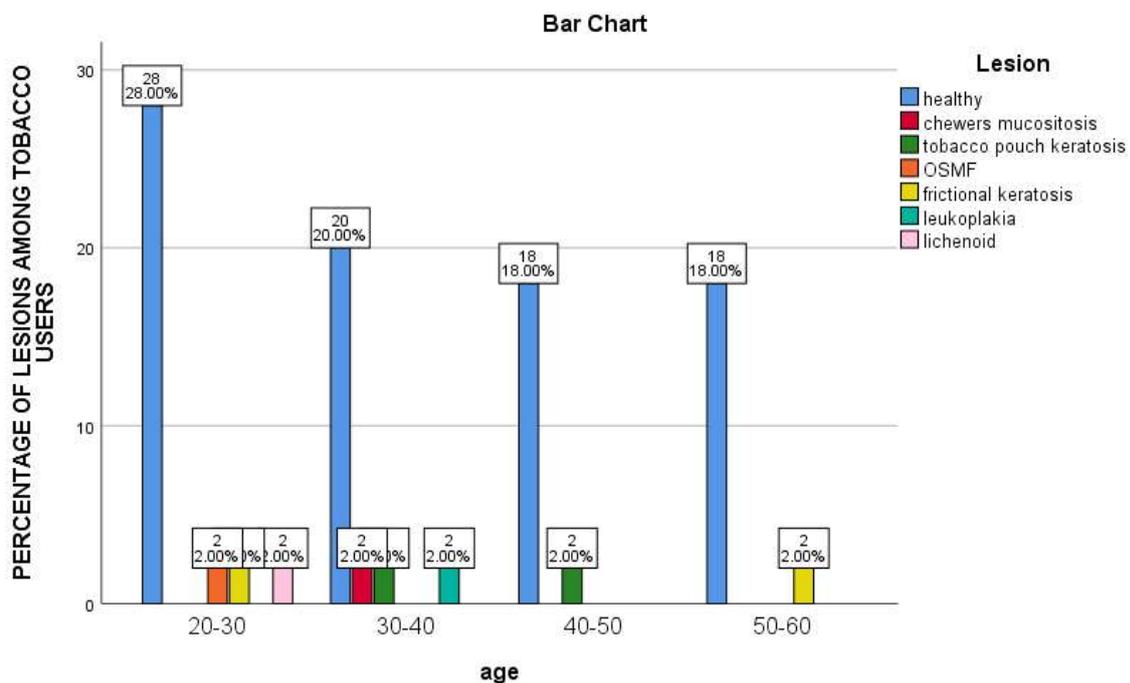


Figure 2: Represents the age group and percentage of lesions present among tobacco users . X axis represents age and Y axis represents the percentage of lesions. Across all age groups, the majority of them had a healthy oral mucosa (blue). Chi square test was done to check the association and it was found to be statistically significant [P=0.058], implying, with age, duration of habit will also increase, thus posing an increased risk for occurrence or premalignant lesions.

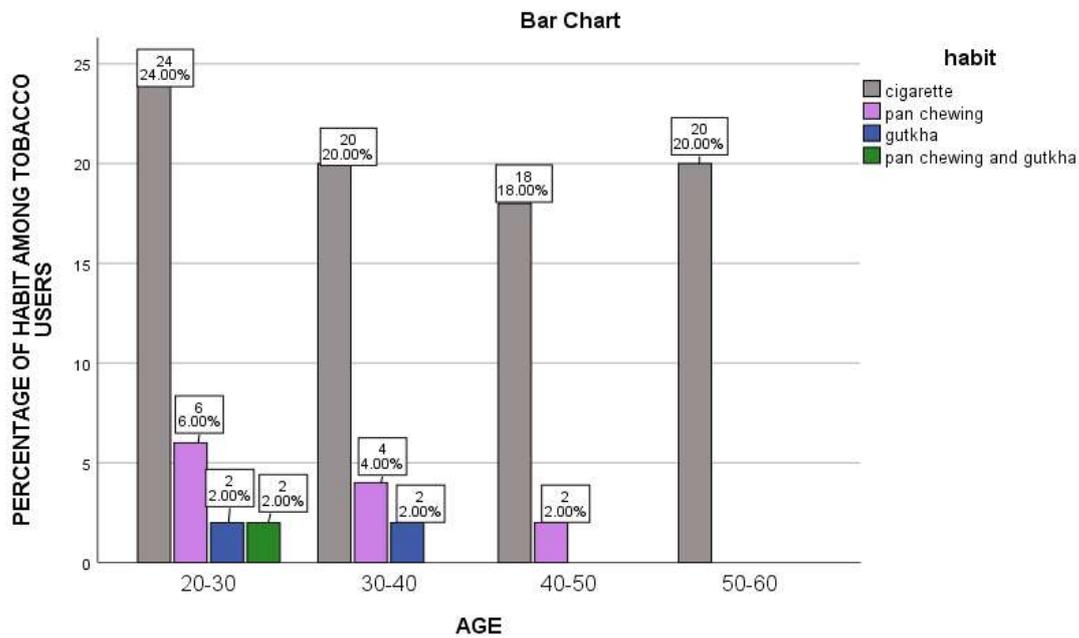


Figure 3: Represents the age group wise distribution of habits among the tobacco users. X axis represents age and Y axis represents percentage of habits. Across all age groups, the majority of them had the habit of smoking cigarettes (grey). Chi-square test was done to check the association and It was found not to be statistically significant [df=9, P=0.222], implying, age has no effect on the type of tobacco products used.

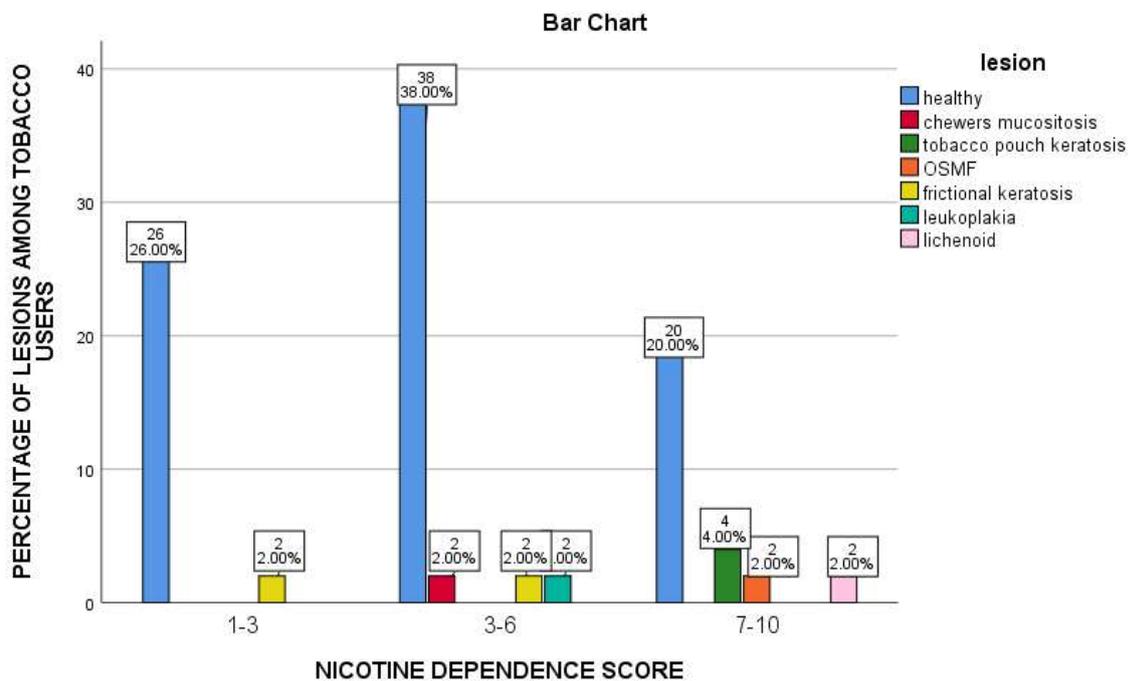


Figure 4: Represents the nicotine dependency score and percentage of premalignant lesions. X axis represents the nicotine dependence score of the patient and Y axis represents the percentage of the lesions among tobacco users. Majority of the smokers had a healthy oral cavity (blue). Chi square test was done and it was statistically significant [P=0.005], implying dependency inturn increases the exposure to carcinogenic substances and thereby incidence of premalignant lesions.

CONCLUSION

Within the limitations of study, it can be concluded that Majority of the tobacco users in the study belonged to the young age group and they had very low to moderate levels of nicotine dependency. Oral mucosal lesions of premalignant nature were seen predominantly in middle to older age groups and in patients with moderate to high nicotine dependencies.

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AUTHORS CONTRIBUTION

Reshmi has contributed to the data collection, study design, analysis, results, tables and manuscript preparation.

Dr. Sri Sakthi has contributed to the design of the study, analysis of the data, results and proofreading of the manuscript.

Dr. Arvind has contributed to reviewing articles.

CONFLICTS OF INTEREST

The research project is self funded and was not sponsored or aided by third parties. There is no conflict of interests

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