

## ORIGINAL RESEARCH

# Oral Lesions in Association with the Tobacco Users: A Cross Sectional Analysis

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### ABSTRACT

**Introduction:** Tobacco is the second major cause of death worldwide, and responsible for about 5 million deaths annually. Very few hospital based studies have been conducted to assess the prevalence of the tobacco use and their epidemiological and behavioural patterns among patients with dental needs. Therefore, the present study was conducted to evaluate the prevalence of tobacco use associated oral mucosal lesions among the patients in a rural set up and to elucidate the associated factors. **Materials & Methods:** The study protocol was analyzed and approved by the ethical review board. The present cross sectional study was conducted among 2835 subjects who consumption of tobacco. The subjects were selected based on the inclusion and exclusion criteria and those who were willing to participate in the study. The need and outcome of the study was explained to the subjects and an informed consent was obtained. **Results:** In smoking form tobacco users group most common individual lesion was Smokers palate 29% followed by Leukoplakia 23%, but Tobacco pouch keratosis and oral submucous keratosis were absent. In smokeless form of tobacco users group most common individual lesion was Tobacco pouch keratosis in 45% subjects followed by oral submucous fibrosis in 12% subjects, but smokers palate and smokers melanosis were absent. In both forms of tobacco users group most common individual lesion was Tobacco pouch keratosis in 51% subjects followed by Leukoplakia in 9% subjects. **Discussion & Conclusion:** Tobacco use in different forms is one of the prime factors responsible for potentially malignant disorders and cancerous lesions. Lack of awareness regarding harmful effects is a major reason. There was strong association of these habits with respect to frequency and duration and occurrence of the oral lesions. The most common age of starting the tobacco habit was between 16-25 years, awareness should be focussed in this age group.

**Keywords:** oral mucosal lesions, smokers, tobacco, tobacco chewers.

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### INTRODUCTION

Tobacco is the second major cause of death worldwide, and responsible for about 5 million deaths annually. This figure is expected to rise to about 8.4 million by the year 2020, with 70% of those deaths occurring in the developing countries.<sup>1</sup> Smoking and smokeless form of tobacco use is common in India. It is estimated that more than 150 million men and 44 million women in India use tobacco in various forms.<sup>2,3</sup>

Tobacco possesses various harmful substances and has been proven to be addictive and harmful for health. Tobacco is basically of two types: smoked tobacco and smokeless tobacco. Both smoked and smokeless tobacco contain alkaloid nicotine, which is the main addictive agent. There are thousands of chemical compounds present in smoked as well as

unburnt tobacco. They act not only as irritants and toxins but also are deadly carcinogens.<sup>4-6</sup>

Oral diseases can be considered as a public health problem due to their high prevalence and significant social impact. The oral mucosal lesions have a greater tendency to transform into malignancy. These oral mucosal lesions including leukoplakia, erythroplakia, and submucous fibrosis are well documented for their malignant transformations. Studies highlighted that the initiation and progression of oral lesions was dependent on the type of tobacco product, duration and the frequency of tobacco use.<sup>7-9</sup>

Studies by remarked a significant association between duration of tobacco use and oral lesions. However few studies have attempted to assess the prevalence of oral mucosal lesions, a search of literature revealed scarcity of studies to assess the Effectiveness of Anti-

tobacco counselling and presence of oral lesions, and quit rates in patients with oral mucosal lesions.<sup>10-12</sup>

In comparison to western populations, in which oral cancer represents about 3% of malignancies, it accounts for over 30% of all cancers in India; this difference can be attributed to regional variation in the prevalence and pattern of habits. However, epidemiological data of the changing trends are lacking.<sup>13,14</sup>

As dentists we often come across patients with tobacco habits, and are in a stronger position compared to other medical practitioners to counsel the patients regarding the adverse effects of tobacco. Also, it is imperative for a dentist to be equipped with all behavioural facts that can influence the tobacco habits in an individual, and all the epidemiological facts related to the habit.<sup>15,16</sup> Very few hospital based studies have been conducted to assess the prevalence of the tobacco use and their epidemiological and behavioural patterns among patients with dental needs. Therefore, the present study was conducted to evaluate the prevalence of tobacco use associated oral mucosal lesions among the patients in a rural set up and to elucidate the associated factors.

## MATERIALS & METHODS

A cross-sectional study was conducted on patients who visited our dental institute during the period of two years. All individuals who had the habit of using tobacco (chewed or smoked forms), alcohol and areca nut and betel quid were included in the study. Patients who were unwilling to give the complete habit details and Subjects without consumption of tobacco were excluded.

## METHOD OF COLLECTION OF DATA

The study protocol was analyzed and approved by the ethical review board. The present cross sectional study was conducted among 2835 subjects who consumption of tobacco. The subjects were selected based on the inclusion and exclusion criteria and those who were willing to participate in the study. The need and outcome of the study was explained to the subjects and an informed consent was obtained.

## STUDY DESIGN

A total of 2835 subjects with consumption of tobacco were enrolled in the study. The subjects were selected according to the inclusion and exclusion criteria. A self structured, pre-tested questionnaire was used for data collection and it was followed by clinical examination for any tobacco associated oral mucosal lesions.

ARMAMENTARIUM 1. Mouth mirror 2. Probe 3. Explorer 4. Tweezer 5. Intraoral mirror 6. Measuring scale 7. Divider 8. Cheek retractor 9. Cotton pieces 10. Mask 11. Gloves

Oral cavity examination for the presence of mucosal lesions was carried out on dental chair using standard diagnostic instruments and illumination. Areas of oral

cavity were examined in sequence lips, labial mucosa, buccal mucosa, floor of the mouth, tongue dorsal and ventral surface, hard palate, soft palate, and oropharynx. The clinical diagnoses of oral mucosal lesions were established using the criteria provided by the *Epidemiology*

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Details about the habit, including duration of smoking, were recorded. In chewers, details like duration and frequency of the habit, and also the site of placement of quid in the oral cavity, were recorded. Patient responses were tabulated for use in the correlation analysis carried out to determine the correlation between adverse habits, including the use of tobacco in some form, and the oral mucosal lesions. The results were statistically analyzed using SPSS software (Statistical Package for the Social Sciences [SPSS]). All patients who had the habit of tobacco consumption were explained about the harmful effects of tobacco and were motivated to quit.

## RESULTS

In the study population of 3000 subjects were screened for some dental problem in the dental camp, out of which 1417 subjects were found to have tobacco consumption habits. Among them 1286 were males and 131 were females. Tobacco related oral mucosal lesions were seen in 746 subjects, out of which 615 were males and 131 were females.

In the study population, 27.4% of the tobacco users were in the age group of 51-60 years, followed by 21-30 age group with 23.1% subjects and 41- 50 age group with 22.5% subjects. For males the most common age group was 51- 60 years with 26.2% subjects followed by 21- 30 years with 25.12% subjects and 41- 50 age group with 23.7% subjects. For females tobacco users, the most common age group was 51-60 years with 43.10% subjects followed by above 60 years with 22.5% subjects and 41-50 age group with 22.10% subjects.

In the study population, 39% of oral mucosal lesions were present in the 51- 60 years age group followed by 41- 50 years age group with 30.30% of lesions present and 31- 40 years age group with 20% of lesion present. For males, oral lesions were more prevalent in 51- 60 years age group with 36.7% followed by 41- 50 years with 28.10% lesions and 31- 40 age group with 19.6% lesions. For females oral lesions were more prevalent in 51- 60 age group with 44.6% followed by 41- 50 years with 29.7% lesions and above 60 years group with 21.5% lesions. The difference between the prevalence of tobacco use and oral lesions in relation to their age and gender was statistically highly significant

In the study population, 29.7% oral mucosal lesions were seen in labourers followed by farmers (25.5%) and business persons (18%). In males the oral lesions were more prevalent in labourers (30.4%), followed

by farmers (23.10%). In females, lesions were more prevalent in farmers (40.10%) followed by housewives (38.6%). The difference between the prevalence of tobacco use and oral lesions in relation to their occupation and gender were statistically highly significant ( $\chi^2 = 565.61$ ;  $P < 0.001$ ).

In the present study, subjects were divided in to three groups according to the frequency of tobacco use. In smokers group, 54% were mild tobacco users and majority oral mucosal lesions (57.7%) were present in moderate tobacco users. In male tobacco chewers, 74% of subject were mild tobacco users with 78.8% had oral mucosal lesions. In female 89% of subject were mild tobacco users with 92% had oral mucosal lesions. In smokers group, 39.8% subjects had less than 5 years of tobacco use followed by 11-20 years tobacco user group. Majority of oral lesions (30.6%) were present in 11-20 years tobacco users followed by 25.8% in more than 30 years of tobacco users group. In male chewers 54% subjects were less than 5 years of tobacco use followed by 5-10 years tobacco user group. Majority of oral lesions (48%) in male chewers were less than 5 years of frequency. In females 36% were greater than 30 years of tobacco use followed by 26% of subjects with less than 5 years.

In the present study, among the total number of subjects, 746 subjects had lesions, out of which single lesions was presented in 631 subjects, two or more lesions were presented in 115 subjects. In males 686 (53%) subjects presented with lesions, out of which single lesions was presented in 575 (44%) subjects, two or more lesions were presented in 111 subjects. In females 131 present with lesions, out of which single lesions was presented in 96 subjects, two or more lesions were presented in 35 subjects. In the present study individual lesion is a combination of different type of single lesion with same type of lesions in the multiple lesions. Out of study population, Tobacco pouch keratosis was seen as a individual lesion in 275 subjects followed by Smokers palate in 208 subjects and Leukoplakia in 177 subjects

In males most prevalent individual lesion was Tobacco pouch keratosis presented in 234 subjects followed by Smokers palate in 208 subjects and Leukoplakia 177 subjects. In females most common individual lesion was Tobacco pouch keratosis present in 41 subjects followed by leukoplakia presented in 17 subjects.

In smoking form tobacco users group most common individual lesion was Smokers palate 29% followed by Leukoplakia 23%, but Tobacco pouch keratosis and oral submucous keratosis were absent. In smokeless form of tobacco users group most common individual lesion was Tobacco pouch keratosis in 45% subjects followed by oral submucous fibrosis in 12% subjects, but smokers palate and smokers melanosis were absent In both forms of tobacco users group most common individual lesion was Tobacco pouch keratosis in 51% subjects followed by Leukoplakia in 9% subjects

## DISCUSSION

Tobacco is a powerful addictive substance. It alters the addicted person's pharmacological, psychological, emotional, and social behavior. Tobacco-related habits are rapidly gaining popularity among the youth of our country. Today, our world is in a state of tobacco epidemic with the number of tobacco users growing every day.<sup>17,18</sup>

The overall prevalence of tobacco use in this study was 6.10% which was very lower than that reported by Chaudhry et al 29.6% in Karnataka and 34.6% in Uttar Pradesh and as a national average of 30.2%. Tobacco use in India has been higher among males than females in India. In this study population, 92.8% were males and 7.2% were females. Male predominance seen in this study was in accordance with Kasat et al.<sup>19</sup> In this study, prevalence of tobacco use was 9.8% among women which is comparable to Kasat et al.<sup>19</sup>

Three routes for progression to cancer have been proposed: oral leukoplakia/ erythroplakia- cancer, oral submucous fibrosis – cancer sequence and oral lichen planus – cancer. Hence knowing the prevalence of these precursor lesions and treating them before they progress to malignancy should be the goal of preventive oral health care workers.

Based on occupation the largest numbers of patients (62.4%) were unskilled which included people with occupations like laborers, daily wagers, cleaners, maids, drivers, farmers etc. Most of these occupations require a substantial amount of physical energy and a high level of concentration in case of drivers with odd work timings. This can be stressful which in combination of peer pressure can lead to the initiation of deleterious oral habits.

In this study, the form of tobacco use, smoking tobacco (57.10%) was more common than the smokeless form (22.5%) in males, which is consistent with the finding of Gupta et al.<sup>20</sup> In this study, all females using smokeless form of tobacco (100%) which is consistent with the finding of Kasat et al. In this study, among males light tobacco users (63.4%) were higher in number than moderate tobacco users (36%).

In this study, most common oral lesion in both the gender was tobacco pouch keratosis, which is comparable with Kasat et al. In this study, smokers palate was the second most common lesion in males, which is comparable with Saraswathi et al.<sup>21</sup> In this study, second most common lesion in females was leukoplakia, which comparable with Saraswathi et al. Whitish mucosa with red centres is a characteristic finding of the hard palate in smokers. The aetiology is probably related more to the high temperature rather than the chemical composition of the smoke, although there is a synergistic effect of the two. The prevalence of smoker's palate (18%) was higher to the previous studies done by Chandra et al.

Leukoplakia, a pre-malignant lesion associated with both forms of tobacco, had an overall prevalence of

16.77, higher than those of other authors Patil et al<sup>22</sup> (8.2%). Tobacco pouch keratosis is confined to areas in direct contact with spit tobacco, chronically stretched tissues in the area of tobacco placement leads flaccidity. It is typically appear as a thin, grey or greyish white, almost 'translucent' plaque with border that blends gradually into the surrounding mucosa. In our study, the overall prevalence was 22%.

## CONCLUSION

Tobacco use in different forms is one of the prime factors responsible for potentially malignant disorders and cancerous lesions. Lack of awareness regarding harmful effects is a major reason. There was strong association of these habits with respect to frequency and duration and occurrence of the oral lesions. The most common age of starting the tobacco habit was between 16-25 years, awareness should be focussed in this age group. The most common influential factor was friends and the most common trigger factor was after meals and with tea or coffee and the tobacco cessation counselling should more focussed in those factors.

## REFERENCES

- Kulkarni, P. S.; Das, K.; Agrawal, N.; Kala, M.; Khanduri, R.; Parikh, P. M. An overview of the tobacco problem in India.
- Mishra, G. A.; Pimple, S. A.; Shastri, S. S. J. I. J. o. M.; Oncology, P. An overview of the tobacco problem in India. **2012**, 33, 139-145.
- Jha, P.; MacLennan, M.; Chaloupka, F. J.; Yurekli, A.; Ramasundarahettige, C.; Palipudi, K.; Zatoński, W.; Asma, S.; Gupta, P. C. J. D. C. P. T. W. B. Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes. **2015**, 3, 175-194.
- Prabhat, J. J. Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes. **2015**, 3.
- Hecht, S. S.; Hatsukami, D. K. J. N. R. C. Smokeless tobacco and cigarette smoking: chemical mechanisms and cancer prevention. **2022**, 22, 143-155.
- Humans, I. W. G. o. t. E. o. C. R. t.; Cancer, I. A. f. R. o.: *Smokeless tobacco and some tobacco-specific N-nitrosamines*; World Health Organization, 2007; Vol. 89.
- Carrard, V.; Haas, A.; Rados, P.; Filho, M.; Oppermann, R.; Albandar, J.; Susin, C. J. O. d. Prevalence and risk indicators of oral mucosal lesions in an urban population from South Brazil. **2011**, 17, 171-179.
- Abati, S.; Bramati, C.; Bondi, S.; Lissoni, A.; Trimarchi, M. J. I. j. o. e. r.; health, p. Oral cancer and precancer: a narrative review on the relevance of early diagnosis. **2020**, 17, 9160.
- Kumar, S.; Narayanan, V. S.; Ananda, S.; Kavitha, A.; Krupashankar, R. J. J. o. F. M.; Care, P. Prevalence and risk indicators of oral mucosal lesions in adult population visiting primary health centers and community health centers in Kodagu district. **2019**, 8, 2337.
- Aishwarya, K. M.; Reddy, M. P.; Kulkarni, S.; Doshi, D.; Reddy, B. S.; Satyanarayana, D. J. A. P. j. o. c. p. A. Effect of frequency and duration of tobacco use on oral mucosal lesions—A cross-sectional study among tobacco users in Hyderabad, India. **2017**, 18, 2233.
- Verma, S.; Sharma, H. J. I. J. o. D. R. Prevalence of Oral mucosal lesions and their association with Pattern of tobacco use among patients visiting a dental institution. **2019**, 30, 652.
- Metgud, R.; Khajuria, N.; Patel, S.; Lerra, S. J. J. o. c. r.; therapeutics. Nuclear anomalies in exfoliated buccal epithelial cells of petrol station attendants in Udaipur, Rajasthan. **2015**, 11, 868-873.
- Bray, F.; Soerjomataram, I. J. C. d. c. p. The changing global burden of cancer: transitions in human development and implications for cancer prevention and control. **2015**, 3, 23-44.
- Rawla, P.; Sunkara, T.; Gaduputi, V. J. W. j. o. o. Epidemiology of pancreatic cancer: global trends, etiology and risk factors. **2019**, 10, 10-27.
- Prakash, P.; Belek, M. G.; Grimes, B.; Silverstein, S.; Meckstroth, R.; Heckman, B.; Weintraub, J. A.; Gansky, S. A.; Walsh, M. M. J. J. o. p. h. d. Dentists' attitudes, behaviors, and barriers related to tobacco-use cessation in the dental setting. **2013**, 73, 94-102.
- Omaña-Cepeda, C.; Jané-Salas, E.; Estrugo-Devesa, A.; Chimenos-Küstner, E.; López-López, J. J. J. o. C.; Dentistry, E. Effectiveness of dentist's intervention in smoking cessation: a review. **2016**, 8, e78.
- Mamman, H.; Othman, A.; Lian, L. J. J. o. B., Agriculture; Healthcare. Adolescent's and drugs abuse in Nigeria. **2014**, 4, 5-9.
- Bonnie, R. J.; Lynch, B. S. Growing up tobacco free: preventing nicotine addiction in children and youths. **1994**.
- Kasat, V.; Joshi, M.; Somasundaram, K.; Viragi, P.; Dhore, P.; Sahuji, S. J. J. o. I. S. o. P.; Dentistry, C. Tobacco use, its influences, triggers, and associated oral lesions among the patients attending a dental institution in rural Maharashtra, India. **2012**, 2, 25.
- Gupta, V.; Yadav, K.; Anand, K. J. I. j. o. c. m. o. p. o. I. A. o. P.; Medicine, S. Patterns of tobacco use across rural, urban, and urban-slum populations in a north Indian community. **2010**, 35, 245.
- Saraswathi, T.; Ranganathan, K.; Shanmugam, S.; Sowmya, R.; Narasimhan, P. D.; Gunaseelan, R. J. I. J. o. D. R. Prevalence of oral lesions in relation to habits: Cross-sectional study in South India. **2006**, 17, 121.
- Patil, P. B.; Bathi, R.; Chaudhari, S. J. J. o. f.; medicine, c. Prevalence of oral mucosal lesions in dental patients with tobacco smoking, chewing, and mixed habits: A cross-sectional study in South India. **2013**, 20, 130.