

Comparative Assessment of Oral Mucosal Lesions and Periodontal Status among Tobacco Users and Non Users Visiting In College & Hospital of Lucknow City (Uttar Pradesh)

Dr. Pallavi Singh^{1}, Dr. Gaurav Jain², Dr. Khushboo Arif³, Dr. Preeti Shukla⁴, Dr. Shaifali Agarwal⁵, Dr. Benazir Alam⁶*

¹Head, Department of Public Health Dentistry, Saraswati Dental College & Hospital, Lucknow. ²Reader, Department of Conservative Dentistry & Endodontics, Saraswati Dental College & Hospital, Lucknow. ³Senior Resident, Department of Public Health Dentistry, Faculty of Dental Sciences, King George's Medical University. ⁴Reader, Department of Conservative Dentistry & Endodontics, Saraswati Dental College & Hospital, Lucknow. ⁵Senior Lecturer, Department of Pediatric and Preventive Dentistry, Saraswati Dental College & Hospital, Lucknow. ⁶Project Co-ordinator, The UNION-Tobacco Control Projecy, Department of Psychiatry, AIMS Deoghar.

*Corresponding Author: Dr. Pallavi Singh

Abstract. Human beings have been using tobacco since 600 AD. It contains 2, 00,000 chemicals and 4,000 carcinogens which causes malignancy and other premalignant conditions. This can be smoked or chewed or snuffed. Tobacco habit is prevalent in both males and females, educated and illiterate, old and young individuals. The present study was undertaken with the aim to assess and compare the oral mucosal lesions and periodontal status of both tobacco users and non-users, visiting the out-patient department of Saraswati Dental College & Hospital, Lucknow. A cross sectional study was carried out involving both tobacco users and nonusers visiting the outpatient department. The questionnaire consisted of socio demographic details like age, sex, marital status and place. Data related to Socio economic details like education, occupation and family income was collected and the socioeconomic status was assessed according to Modified Kuppuswamy classification. Out of the total 1000 subjects examined, 65.5% of subjects were current tobacco users. The prevalence of ex-users and occasional users in the current study was negligible. Among the tobacco users 26.5% of subjects were smokers and 44.6% of subjects were chewers and the rest 28.9% of subjects were consumers of both forms of tobacco. Present study showed that tobacco users having the habit for past 2 to 5 years of duration had higher prevalence of oral mucosal conditions, gingival bleeding, calculus, periodontal pockets and attachment loss.

Keywords: Tobacco, Oral mucosal lesion, periodontal status, Smoking.

Introduction

Tobacco use is a major public health problem. It is one of the leading preventable causes of death and disability worldwide. World Health Organization estimates 4.9 million deaths are annually attributed to tobacco. This figure is expected to rise to 10 million in 2030, with 7 million of these deaths occurring in developing countries, mainly India¹.

Human beings have been using tobacco since 600 AD. It contains 2, 00,000 chemicals and 4,000 carcinogens which causes malignancy and other premalignant conditions. This can be smoked or chewed or snuffed. Tobacco habit is prevalent in both males and females, educated and illiterate, old and young individuals².

India's tobacco problem is more complex than probably that of any other country in the world, with a large consequential burden of tobacco related disease and

death³. Cigarette smoking is more common in urban areas whereas beedi in rural India. As beedi smoke contains more tar, nicotine and carbon monoxide than filter-tip cigarettes, it is more harmful relatively⁴.

Among thirteen to fifteen year-old school-going children, the current use of any tobacco product varies from 3.3% in Goa to 62.8% in Nagaland⁵. The traditional forms, such as betel quid with tobacco, tobacco with lime, and tobacco tooth powder are commonly consumed in addition to the other forms of Smokeless Tobacco and the use of new products is increasing. Usually men are the consumers but of late children, teenagers, women of reproductive age and professionals also consume the smokeless form⁶. The incidence of oral premalignant and malignant lesions is on the rise due to an increased number of people falling prey to the tobacco habits⁷.

Smoking is associated with several changes in the oral mucous membrane and has a direct carcinogenic

effect on the epithelial cells of the oral mucous membranes. Indeed, smoking is the major risk factor of developing oral cancer⁸. The most common type of oral cancer is squamous-cell carcinoma, which includes about 90% of oral malignancies⁹. The present study was undertaken with the aim to assess and compare the oral mucosal lesions and periodontal status of both tobacco users and non-users, visiting the out-patient department of Saraswati Dental College & Hospital, Lucknow (Uttar Pradesh) India.

Materials & Methods

A study was conducted among tobacco and non-tobacco users in patients visiting as outpatient seeking dental treatment in Department of Oral medicine and Radiology to find out their oral mucosal and periodontal status and also the effects of different forms of tobacco and the duration of consumption. The survey protocol was reviewed and approved by the institutional ethical committee and informed consent was obtained from a parent or guardian each participants. All the patients visiting the outpatient department of Saraswati Dental College & Hospital, Lucknow during the period from February to July 2023 who satisfies the below mentioned eligibility criteria shall be included in the study.

All adult patients aged 18 and above & subjects willing to participate in the study were included. Subjects who have any systemic illness, pregnant, consumption of alcohol, difficulty in mouth opening, wear dentures, undergone periodontal therapy, in past three month were excluded from the study.

A cross sectional study was carried out involving both tobacco users and nonusers visiting the outpatient department Of Saraswati Dental College & Hospital. The questionnaire consists of socio demographic details like age, sex, marital status and place. Data related to Socio economic details like education, occupation and family income was collected and the socioeconomic status was assessed according to Modified Kuppuswamy classification.

All the participants were classified into users or non-users of tobacco either in the smoked or smokeless written informed Consent was obtained from the study subjects in the language that they understand. A pilot study

was conducted to determine the Oral Mucosal Lesions and Periodontal diseases among tobacco users and non-users among patients attending the outpatient department of Saraswati Dental College & Hospital.

The data was fed into the SPSS (Statistical Package for Social Studies) software-21 for analysis. Karl Pearson Chi-square test was used in analysis of the data. Chi-square test was used in analysis as the data were in frequencies of more than one categories and also it was able to find the significance (P value) if any in the same data. Students t-test and ANOVA test was used to compare the means and find the significance if any.

Results

The present study was conducted among tobacco users and non-tobacco users in Lucknow city to assess the oral mucosal and periodontal status among above 18 year-old. Data collected was analyzed and showed the following observation. Prevalence of oral mucosal lesions was 20.9% and Periodontitis was 59.3%.

The Prevalence of the Oral Mucosal lesion in male was (11.6%) and in female was (9.3%), the prevalence of Periodontitis in male was (34.9%), female was (24.4%).

According to the Gender wise distribution of tobacco users and non-users among 58.6% of males 38.7% are tobacco users and 19.9% are non-users and among 41.4% of females, 22.4% of females are tobacco users and 19.0% are non-users. According to the Age wise distribution of the subjects, in 29-38 years the number of males were (124) more accounted as tobacco users and female were (97) in the age of 29-38 years. Among the study subjects 42.9% were current tobacco users, while 38.9% of subjects were non-tobacco users. Ex-users accounted were 18.2% of the study population respectively.

The overall prevalence of oral mucosal conditions in Lucknow city was found to be (20.9%), with Oral Submucous Fibrosis being the most prevalent condition (10.2%). Ulceration was found in (1.8%) of subjects and the prevalence of Leukoplakia in (5.2%) of study subjects, Abscess was found in (3.5%) of study subject. The percentage of oral mucosal lesion was highly assessed in cigarette smokers (34.0%). Table 1

Distribution of smoking tobacco users	VALUES	Lesion		Total	p VALUE
		Absent	Present		
Non-User	N	543	112	655	0.01
	%	68.6%	53.6%	65.5%	
Cigarette	N	182	71	253	

	%	23.0%	34.0%	25.3%
Bidi	N	64	26	90
	%	8.1%	12.4%	9.0%
Hookah	N	2	0	2
	&	0.3%	0.0%	0.2%
Total	N	791	209	1000
	%	100.0%	100.0%	100.0%

Table 1. Distribution of Study Population with Oral Mucosal Lesion Present In Different Type of Tobacco Smokers

Periodontal status was assessed using community periodontal index. Bleeding was observed in 29% of subjects and 9.4% of subjects had calculus, while pocket

of 4 to 5 mm were detected in 46.2% of subjects. Deep pockets were observed in only 14.3% of study subjects. Table 2

GENDER	STATUS OF THE POPULATION	SCORE							
		BLEEDING		CALCULUS		SHALLOW POCKETS		DEEP POCKETS	
		N	%	N	%	N	%	N	%
MALE	CURRENT USER	79	47.9	30	43.5	120	45.5	39	47.6
	NON USER	48	29.1	24	34.8	98	37.1	27	32.9
	EX USER	38	23.0	15	21.7	46	17.4	16	19.5
FEMALE	CURRENT USER	52	41.6	7	28.0	70	35.4	28	45.9
	NON USER	57	45.6	12	48.0	96	48.5	24	39.3
	EX USER	16	12.8	6	24.0	32	16.2	9	14.8
TOTAL		290	29	94	9.4	462	46.2	143	14.3

Table 2. Distribution of Study Population with Community Periodontal Index Score

Discussion

Tobacco consumption is the single largest cause of death in the developed world and increasing in the less developed countries¹⁰. Developing countries also account for about half of the world's disease burden to tobacco as measured by DALY's (WHO)¹¹.

In present study oral submucous fibrosis was prevalent in 0.8% of subjects, which is slightly higher

compared to 0.5% prevalence rates found in a study conducted by Pindborg¹². Periodontal status was assessed by CPI index. The prevalence of periodontal disease was found to be 99.8% in the state. Calculus was found in 41.4% of subjects and shallow pockets in 35.3% of the study population. Deep pockets were recorded in 10% of the population. The findings were similar to the study by Dental Council of India (2004)¹³.

In the present study 65.5% of the subjects in Uttarpradesh used tobacco in one or the other form. The higher prevalence of tobacco consumption is seen in the present study compared to a lower prevalence of 27% found in a study by Rani M (2003)¹⁴ and 18% in a study by Dental Council of India (2004)¹³. This can again be attributed to sample size and selection of sample which was according to age in our study.

The prevalence of oral mucosal conditions was found to be more among current tobacco users (4.7%) compared to non-tobacco users (0.9%). 2.55% of the current tobacco users had leukoplakia. The prevalence of leukoplakia in non-tobacco users was just 0.55%. This findings was consistent with other studies conducted by Mehta FS (1972)¹⁵, Gupta PC (1989)¹⁶. This clearly indicates that the tobacco usage is one of the major cause for oral mucosal diseases.

The presence of oral mucosal conditions like leukoplakia, OSMF, chewers mucosa, was found to be more among tobacco chewers (2.65%). This can be probably due to close proximity of tobacco to the mucosal tissues (Georgia KG et al 2001)¹⁷.

There was high prevalence of gingival bleeding, calculus and pockets among the subjects who smoked tobacco for duration of 2 to 5 years. The severity of community periodontal index scores was higher among the subjects having the habits for past 5 to 10 years. This clearly shows that the duration of smoking habits is related to severity of periodontal destruction (Ikeda N)¹⁸.

There was statistically significant difference in CPI scores among smokers, chewers and users of both forms of tobacco. Tobacco chewers had high prevalence of calculus (21.5%) and also pockets of 4–5mm (17.2%) when compared to tobacco smokers and users of both forms of tobacco. This may be due to the cumulative effect of placement of tobacco for longer duration in the mouth and also because of presence of more irritants in smokeless tobacco products (Yang MS)¹⁹.

Conclusion

The present study showed that tobacco use in any form was harmful to periodontal health and also caused oral mucosal conditions. The different forms of tobacco use and also along with duration of use had its significant effect on severity of oral mucosal and periodontal conditions.

References

1. The Global Youth Tobacco Survey Collaborative Group, *Tob Control* 2002; 11:252-270
2. Murray CGL, Lopez AD. Alternative projections of mortality and disease by cause, 1990-2020: global burden of disease study. *Lancet* 1997; 349:1498–504.3.
3. Christen AG, Swanson BZ, Glover ED, Henderson AH. Smokeless tobacco: the folklore and social history of snuffing, sneezing, dipping and chewing. *JADA* 1982; 105:821-829.
4. Secretary of State for Health and Secretaries of State for Scotland, Wales and Northern Ireland. Smoking kills. A White Paper on tobacco, 30 November 1999. London, HM Stationery Office, 1999.
5. Centers for Disease Control and Prevention. Trends in cigarette smoking among high school students – United States, 1991-2001. *MMWR Morb Mortal Wkly Rep* 2002; 51:409–12.
6. Peto R, Lopez AD, Boreham J, et al. Developing populations: the future health effects of current smoking patterns. In: *Mortality from smoking in developed countries, 1950-2000*. Oxford: Oxford University Press, 1994; A101-3.
7. Kessler DA. Nicotine addiction in young people. *N Engl J Med* 1995; 333:186.
8. Perry CL, Eriksen MP, Giovino G. Tobacco use: a pediatric epidemic. *Tobacco Control* 1994; 3:97–8
9. Stewart BW, Kleihues P. *World Cancer Report*. Lyon: WHO International Agency for Research on Cancer, 2003.
10. Mohamed S, Janakiram Chandrashekhara. Periodontal status among tobacco users in Karnataka, India. *IJPHD* 2013; 57(2):105-108.
11. Mishra M, Mohanty J, Sangupta S, Tripathy S. Epidemiological and clinicopathological study of oral leukoplakia. *Indian J Dermatol Venereol Leprol* 2005; 71: 161-165.
12. Fisher MA, Taylor GW, Tilashalaski KR. Smokeless tobacco and severe active periodontal disease, NHANES III. *J Dent Res* 2005 (84); 8: 705-10.
13. Schmidt LB, Homer L. Tobacco smoking history and presentation of oral squamous cell carcinoma. *J Oral Maxillofac Surg*. 2004; 62: 1055-58.
14. Ariyawardana ADS, Athukorala A, Arulanandam. Effect of betel chewing, tobacco smoking and alcohol consumption on oral submucous fibrosis: a case– control study in Sri Lanka. *J Oral Pathol Med* (2006); 35: 197–201.
15. Patel p, Patel v. Oral Mucosal Lesions among Residence of a Town in North Gujarat. *Natl J Med Res* 2011; 1(1):3-6.
16. Dasar P.L and Choudhary H.D. Assessment of the influence of frequency and duration of smoking on the periodontal health among employees of Nuclear power station Kaiga, Karwar; *JIAPHD* 2011; 17:468-470.
17. Tomar SL, Winn DM, Swango PA, Giovino GA, Kleinman DV. Oral mucosal smokeless tobacco lesions among adolescent in United States. *J Dent Res* June, 1997; 76(6):1277-1286.
18. Ikeda N, Handa Y, Khim SP, Durward C, Axell T, Mizuno T, et al. Prevalence study of oral mucosal

- lesions in a selected Cambodian population. *Community Dent Oral Epidemiol* 1995; 23:49-54.
19. Yang MS, Su IH, Wen JK, Ko YC. Prevalence and related risk factors of betel quid chewing by adolescent students in southern Taiwan. *J Oral Pathol Med* 1996; 25: 69-71.