

Tobacco use, its influences, triggers, and associated oral lesions among the patients attending a dental institution in rural Maharashtra, India

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Abstract

Background: World Health Organization (WHO) predicts that tobacco deaths in India may exceed 1.5 million annually by 2020. Objectives: The aim of this study was to estimate the prevalence of tobacco use, its influences, triggers, and associated oral lesions among the patients of Rural Dental College and Hospital of Loni, Maharashtra. **Materials and Methods:** A hospital based cross-sectional study was conducted from June - December 2010. All the patients from the outpatient department and with tobacco habits were included in the study. Patients were interviewed through a pre-tested structured questionnaire in relation to their tobacco habits, its influences and triggers. Also clinical examination was carried out to check for any tobacco related oral lesions. For the data analysis, Microsoft Excel and chi-square test was used. **Results:** The overall prevalence of tobacco use was 16.38%. Smokeless form of tobacco was more prevalent in both males (81.84%) and females (100%). Majority of the patients (males - 68.22%, females- 90.62%) were light tobacco users. About 76.09% males and 31.25% females admitted that they developed the habit due to initial influence of friends. The most common oral mucosal lesion in both the males (42.20%) and females (11.07%) was tobacco hyperkeratosis. Most common trigger for tobacco use was “work related” (69.14%) in males and “after meals” (53.13%) in females. **Conclusion:** Since the number of tobacco users visiting the dental hospital is reasonably high; dentists can contribute to restrain the hazard through community educational activities such as de-addiction counseling of tobacco users to quit the habit.

Key words: Oral mucosal lesion, prevalence, rural, tobacco, triggers

INTRODUCTION

Tobacco is the second major cause of death worldwide, and responsible for about 5 million deaths annually.^[1] 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.^[2] 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.^[3] Prevalence of tobacco use varies by area and gender; ranging from 12.8% in Punjab to 69.8% in Mizoram in men,^[4] and <1% in Punjab to 61% in Mizoram in women.^[3] It is the need of the hour to reduce the use of tobacco to decrease the associated morbidity and mortality. Tobacco use is influenced by various factors, such as, individual attitudes, social acceptability, availability, advertising campaigns etc. Tobacco use in India differs from that of the globe, since the dominant form of tobacco used globally is the cigarette; however, in India only 20% of the tobacco is consumed as cigarettes, 40% is consumed as bidi and the rest in the smokeless forms.^[5]

As dentists we often come across patients with tobacco

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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 behavioral facts that can influence the tobacco habits in an individual, and all the epidemiological facts related to the habit. Very few hospital based studies have been conducted to assess the prevalence of the tobacco use and their epidemiological and behavioral patterns among patients with dental needs. Therefore, the present study was conducted to evaluate the prevalence of tobacco use among the patients in a rural set up and to elucidate the associated factors. This information is required to develop and implement locally relevant tobacco intervention strategies.

MATERIALS AND METHODS

The study was conducted at the Rural Dental College and Hospital (RDCH), Loni from June - December 2010. Loni is a village in Ahmednagar district in the Maharashtra state, India. The catchment area of the RDCH is the contiguous 200 drought-prone villages of the district. All the 4426 patients who reported to the Department of Oral Medicine and Radiology were questioned to select the patients who consume tobacco in any form. The 725 patients who agreed to have the habit of tobacco smoking and/or smokeless, were included in the study after obtaining a written informed consent. Trained dental surgeons interviewed the patients through a pre-tested structured questionnaire to collect data on the age, sex, education, socio-economic status, and marital status, form of tobacco, duration and frequency of consumption, reason for initiation, triggers for tobacco use, and any previous attempts to quit the habit. Further, the patients were clinically examined for any tobacco related oral lesions. Any respondent using tobacco “up to 5 times/ day” was categorized as a light tobacco user, “between 6 to 20 times/ day” as a moderate tobacco user, and “>20 times/ day” was classified as a heavy tobacco user.^[6]

Statistical analysis

The data collected was tabulated and analyzed using Microsoft Excel. Chi-square test was used to evaluate the presence of a statistically significant difference between the gender and the variable characteristics (age, educational status, occupational status etc) under the study.

RESULTS

Demographic profile of the study subjects

Of the 4426 patients examined with one or the other dental problems, 725 or 16.4% were found to have tobacco consumption habits. Out of the 725 participants of the study population, 661 males (91.18%) outnumbered the 64 females (8.82%). Over 67% males and 98% females included in our study were married. Majority, that is, 57% of the tobacco users are in the age group of 19-38 years. In males, the prevalence of tobacco use was the highest in the age group 19 – 28 years (40.09%) followed by the age group of 29 – 38 years (18.75%); whereas in females, it was highest in the age groups of 29 -38 years (29.68%) and over 59 years (29.68%), followed by the age group of 39 - 48 years (18.75%) [Table 1]. Tobacco use was seen as early as 15 years in both the genders. The age and gender of the people were found to be very strongly associated ($\chi^2 = 12.60$; $P < 0.01$) as far as the tobacco consumption was concerned. Over 75% males and 98% females either had “no income” (housewives/ students) or “less than Rs. 5000” per month. Educational attainment level was higher for males than for females and more than half of the females were illiterate (51.56%) [Table 2]. The difference between the incidence of tobacco users in relation to their educational status and gender was statistically highly significant ($\chi^2 = 73.18$; $P < 0.01$)

Tobacco use was prevalent across all the occupational groups. However, its distribution reveals that majority

Table 1: Distribution of tobacco users by age and sex as seen in the study

Age	Male		Female		Total	
	No	%	No	%	No	%
Up to 18	32	4.84	1	1.56	33	4.55
19-28	265	40.09	4	6.25	269	37.10
29-38	124	18.75	19	29.68	143	19.72
39-48	90	13.61	12	18.75	102	14.07
49-58	60	9.10	9	14.08	69	9.52
>59	90	13.61	19	29.68	109	15.03
Total	661	100.00	64	100.00	725	100.0

of the tobacco consumers were farmers (41%). In males, the prevalence of tobacco use was the highest in farmers (42.81%); whereas in females it was highest in housewives (67.21%) [Table 3]. The differences of rates of tobacco use with regard to the gender and occupation is statistically highly significant ($\chi^2 = 58.29$; $P < 0.01$)

Prevalence of tobacco habits, its influences, triggers and oral lesions

Use of smokeless tobacco was more prevalent in both the genders. Among males, 81.84% used smokeless tobacco, 10.59% were smokers and 7.56% used both. All the females used a smokeless form of tobacco. The most common smokeless form of tobacco consumption was use of “*khaini*” - a mixture of tobacco powder and lime prepared instantaneously by the user (38.58%) followed by “*gutka*” (26.32%) in males and “*mishri*”- roasted fine tobacco powder (68.75%) in females. Among the

smokers, use of cigarette (8.17%) was more common than *bidi* (5.75%). Maximum patients [37.36% males and 29.68% females], were using tobacco for 1-5 years. Over 68% males and 91% females used tobacco 1-5 times a day. Nearly 30% males and over 9% females used tobacco for 6-20 times a day. Alarmingly, a little over 2% males used tobacco >20 times a day. Majority of the males (65.96%) and females (76.56%) never attempted to quit the habit. Over 72% of the total participants were initiated into the habit by friends – male 76%, female 31%. Nearly 14% of the males attributed stress as major cause of initiation; whereas 34.37% females started the habit for “cleaning of teeth” [Table 4]. Most common trigger for tobacco use in males was “task related” (69.14%) followed by “After meals” (64.90%). “After meals” (53.13%) turned out to be the most common trigger in females followed by “During morning toilet” (45.31%) [Table 5]. The study revealed an astonishing fact that 366 patients i.e.,

Table 2: Gender-wise educational status of tobacco users as seen in the study

Education	Male		Female		Total	
	No	%	No	%	No	%
Illiterate	80	12.10	33	51.56	113	15.59
Primary	52	7.86	9	14.08	61	8.41
Secondary	248	37.51	18	28.12	266	36.69
Higher secondary	118	17.85	2	3.12	120	16.55
Dip./Degree	163	24.68	2	3.12	165	22.76
Total	661	100.00	64	100.00	725	100.0

Table 3: Distribution of tobacco users by occupation and gender as seen in the study

Occupation	Male		Female		Total	
	No.	%	No.	%	No.	%
Farmer	283	42.81	15	23.44	298	41.10
Service	154	23.30	2	3.13	156	21.52
Business	70	10.59	2	3.13	72	9.93
Others (Student / Housewife/Retired)	154	23.30	45	70.30	199	27.45
Total	661	100	64	100	725	100

Table 4: Distribution of tobacco users based on Reason for Initiation as seen in the study

Reason for initiation	Male		Female		Total	
	No	%	No	%	No	%
Friends	503	76.09	20	31.25	523	72.14
Stress	92	13.91	5	7.81	97	13.38
Parents	21	3.17	11	17.18	32	4.41
Loneliness	8	1.21	2	3.12	10	1.38
Cleaning of teeth	11	1.66	22	34.37	33	4.55
Other (Toothache, Role model, Driving, Night shift, Studying)	26	3.96	4	6.27	30	4.14
Total	661	100.00	64	100.00	725	100.00

Table 5: Distribution based on triggers for tobacco use (Multiple choices – more than one answer possible) as seen in the study

Triggers	Male (n = 661)		Female (n = 64)		Total (n=725)	
	No.	%	No.	%	No.	%
After meals	429	64.90	34	53.13	463	63.86
During morning toilet	272	41.15	29	45.31	301	41.52
Work related (Before starting, During, After completing work)	457	69.14	14	21.87	471	64.97
With coffee or tea	220	33.28	12	18.75	232	32.00
Relaxing	224	33.89	10	15.62	234	32.28
Tension	107	16.19	4	6.25	111	15.31
Other (Seeing others smoke/ chew tobacco, Studying/Wanting to stay alert, Drinking alcohol)	184	27.84	1	1.60	185	25.51

Table 6: Presence of oral mucosal lesions among tobacco consumers as seen in the study

Oral mucosal lesions	Male		Female		Total	
	No	%	No	%	No	%
No lesion	304	45.99	55	85.93	359	49.52
Lesion present	357	54.01	9	14.07	366	50.48
Total	661	100.00	64	100.00	725	100.0

Type of oral lesion	Male		Female		Total	
	No	%	No	%	No	%
Tobacco hyperkeratosis	279	78.15	7	77.78	286	78.14
OSMF	55	15.41	1	11.11	56	15.30
Other (Smokers palate, Leukoplakia, Lichen planus, Leukooedema, Ca buccal mucosa)	23	6.44	1	11.11	24	6.56
Total	357	100	9	100	366	100

OSMF = Oral submucous fibrosis; Ca = Carcinoma

over 50% developed the lesions. Tobacco hyperkeratosis was the most common oral mucosal lesion in both males (42.20%) and females (11.07%) [Table 6]. The association between the presence of oral lesions and the gender proved to be highly statistically significant ($\chi^2 = 37.23$; $P < 0.01$).

DISCUSSION

The researchers are fully aware of the fact that ours being a hospital based study, it cannot reflect the true magnitude of the tobacco problem in the community. The overall prevalence of tobacco use in our study was 16.38% which is lower than that in Karnataka (29.6%), Uttar Pradesh (34.6%)^[7], and as well as national average of 30.2%.^[8] In our study, prevalence of tobacco use was 91.7% among men which is higher than reported by Sinha *et al.* (71%),^[9] Gupta *et al.* (52.6%),^[10] National Family Health Survey (NFHS)-3 report (61.1%),^[11] and in rural area of UP (51%).^[7] In our study, prevalence of tobacco use was 8.82% among women which is comparable to rural area

of UP (9.2%)^[7]; but is lower than overall prevalence in Maharashtra (15%-20%)^[3] and also reported by Gupta *et al.* (17.7%).^[10] In this study, most of the males and females had very less income (< 5000 rupees) which is in contrast with the hospital based study of Saraswathi *et al.*^[12]; but consistent with the study of Kinra *et al.*^[13] and the overall national situation,^[8] thus supporting the finding that tobacco use is higher among individuals with lower standards of living. In our study, overall education attainment of patients was low which supports the finding that tobacco use is higher among individuals with lower levels of education, as also evidenced by various other studies.^[3,8] Majority of the subjects in this study never thought of quitting the habit since interest in quitting appears to be related to higher levels of education as shown by other studies.^[7,14]

Occupation was assessed according to respondent's self-reports. Occupation appeared influence men's tobacco use more than that of women, because a large proportion of the women in this sample were homemakers. Individuals working in the farm were

highly associated with the habit; as they felt that it reduced the tiredness and brought in excitement in the body after heavy labor work. In this study, the use of smokeless tobacco (65%) was more common than the smoking form (35%) in males, which is consistent with the finding of Sinha *et al.*,^[9] but in contrast to the finding of Gupta *et al.*^[10] In our study, all females were using smokeless form of tobacco, “*mishri*” (68.75%) in particular, which is consistent with the finding of Gupta *et al.*^[14] Indian government has banned smoking in public places; however, has imposed no ban on smokeless products, which probably could be a reason why smokeless form is more prevalent in this sample studied. In our study, men practiced smoking as well as tobacco chewing, whereas women only chewed or applied tobacco for cleaning of teeth which is consistent with the observation made by Gupta *et al.*^[15] Although smoking by women is not well accepted in the Indian society, consumption of smokeless tobacco is well accepted, and the use of *mishri* is a very common practice in Maharashtra and Goa. The *mishri* use (68.75%) among women was higher in our study than that reported by Pratinidhi *et al.* (30.9%).^[16]

Among men, the most commonly used smokeless form of tobacco was *khaini* (38.58%) which is consistent with the study done by Sinha *et al.* (57.1%).^[9] “*Gutka*” was the second most commonly used smokeless product and its increasing use may be contributed to the advertising and the marketing strategies of manufacturers. *Khaini* is less expensive compared to *Gutka*; hence may be used by more number of people. In our study, among males, cigarette smokers (8.17%) were more than bidi smokers (5.75%), which is in contrast to the finding of Sorensen *et al.*^[17]

In this study, among males, light tobacco users (68.22%) were higher in number than moderate tobacco users (29.63%), which is in contrast to the study of Goswami *et al.*^[6] [light and moderate tobacco users were equal]. In our study, females were mainly light tobacco users (90.62%) which is consistent with the study by Goswami *et al.* (71.8%).^[6] Since friends and stress were the most common reasons for tobacco use initiation in males; and, cleaning of teeth the important cause in females, these factors should be kept in mind while designing the interventional strategies. This study probably for the first time has focused on the triggers for tobacco use. Counseling of patients on how to avoid tobacco in the presence of the triggering factors should be an important aspect of tobacco cessation programs. The prevalence of oral soft tissue lesions in our study was 8.26%, which is more than reported

by Saraswathi *et al.* (4.1%).^[12] In our study, all lesions were more prevalent in men than women, which is consistent with study by Saraswathi *et al.*^[12] In our study, the most common oral lesion in both the genders was tobacco hyperkeratosis followed by oral submucous fibrosis (OSMF) which is in contrast with the study by Saraswathi *et al.*^[12], where, smoker’s melanosis was the most common lesion in both genders, followed by smoker’s palate in males and leukoplakia in females.

CONCLUSIONS

Tobacco use and its consequences are clearly an impediment to the development of a healthy and prosperous society. Laws enforced by the Government alone are not sufficient to curb the menace of tobacco. Since the number of tobacco users visiting the dental hospital is reasonably high, the dental faculty, the dental students along with social scientists, and the public health workers, should plan for regular “out-reach” activities including health education, de-addiction counseling, early detection etc, to help to curb this issue. Active involvement of the media and influence of religious *gurus* and the family members in the “out-reach” activities will certainly help in creating a tobacco free society.

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