

PREVALENCE OF ORAL POTENTIALLY MALIGNANT DISORDERS AMONG TOBACCO AND BETEL QUID USERS IN LUCKNOW

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ABSTRACT:

Objectives. The prevalence of oral potentially malignant disorders (OPMDs) among tobacco, betel quid, and alcohol users in Lucknow, India was assessed. Further, the prevalence observed was related to age, gender, and habit history of the subjects.

Subjects And Methods. A total of 2008 users of both genders were randomly selected from the population in 20-80 years age group. Information regarding habits and OPMDs was assessed using an interviewer-administered questionnaire and clinical methods.

Results. Male users were more and betel-quid chewing was the most common habit. Chewing, smoking, and combined habits, were more common in men in the 20-40 years age group, with a gradual waning of these habits and higher alcohol use with progression of age. Smoking, chewing, and combined habits showed a marked peak in the 40-60 years age group among women. The prevalence of OPMD was 13.2 percent, with a high incidence of oral leukoplakias (OL) followed closely by oral submucous fibrosis (OSF). Most OPMDs occurred in males and OL was more common among males. OSF was predominant among women.

Conclusion. The high incidence of OPMDs in the study population has alarming implications for the future considering the cultural and social characteristics of tobacco and betel-quid chewing in India.

Keywords: OPMD, Lucknow, Tobacco, Betel quid, Precancer



INTRODUCTION:

In the WHO workshop held in 2005, a panel of eminent scientists in the field of epidemiology, oral medicine and pathology, and molecular biology proposed and ratified a change in the nomenclature of oral premalignant lesions and conditions to oral potentially malignant disorders (OPMDs). The rationale behind this change was that not all disorders that were listed as pre

cancer transformed into cancer, but all of them had the potential to do so. [1]

OPMDs include leukoplakia, erythroplakia, lichen planus, oral submucous fibrosis, actinic cheilitis, xeroderma pigmentosum and Fanconi's anemia. [2]

OPMDs are commonly associated with tobacco use, in both smoking and

smokeless forms. Betel-quid chewing and alcohol consumption are other major risk factors. Tobacco usage and betel quid chewing are widely prevalent habits in the Indian sub continent. [3,4] In this background, we conducted a cross-sectional study on the prevalence of OPMDs among tobacco and betel quid users in Lucknow, Uttar Pradesh. Further, we attempted to relate the prevalence of OPMDs to age and gender of the subjects and the type of habit.

MATERIALS AND METHODS:

Study Subjects. The study was conducted in 2008 subjects, randomly selected from the inhabitants of Lucknow, capital of the Indian state Uttar Pradesh. Only users of tobacco or betel quid or both and being above 20 years of age were considered for the study. Informed and signed consent was taken from all subjects to participate in the study. The ethical approval for this study was obtained from the ethical committee of BBDCODS, Lucknow.

Questionnaire. An interviewer-administered questionnaire (Figure 1) was distributed among the subjects for assessment of information on the socio-demographic variables and on the tobacco, betel quid, and alcohol consumption habit history of the individual. The frequency, duration and type of pan chewing (with or without tobacco) smoking (bidi or cigarette) and alcohol drinking habits were ascertained. Pan chewing subjects were also asked about the placement of the quid in their

mouth overnight and if they swallowed the chewing fluid.

Assessment of OPMDs. All the subjects were examined with mouth mirror under proper illumination for clinical examination of the oral cavity. Since this was essentially a field study, care was taken to follow aseptic precautions during the course of clinical examination. All the lesions listed under oral PMDs by WHO 2005 were considered for the study. In the presence of oral mucosal lesions, clinical diagnosis was arrived upon, the inspectory and palpatory findings were recorded, and the lesions were photographed in color.

Statistical analysis. The chi-square (χ^2) test was used to compare the categorical data. The difference between/among proportions was compared by proportion Z test.

OBSERVATIONS:

More than 70 percent of study subjects were males and more users were found in the 40-60 years age group (Table 1). Chewing was the most common habit followed by a combination of the habits and alcohol misusers were minimal (Table 2). A high number of chewers were seen among females and both chewers and smokers were high among males (Table 3). Correlation of the tobacco habits with the age and gender of the subjects revealed a statistical significance (Table 4).

OPMDs were identified in 13.2 percent of our study subjects (Table 5), with a

predominance of leukoplakia (OL) followed by oral submucous fibrosis (OSF). More OPMDs were seen in males, OL followed by OSF was more among males, and OSF was predominantly seen in females (Table 6). A majority of OLs were seen in subjects with combined habits followed by smokers and OSF was common in chewers followed by combined habits (Table 7). Further, oral lichen planus (OLP) was common in chewers. OPMDs were not seen in the alcohol users, and none of the smokers presented with OSF or OLP. Correlation of OPMDs with age and gender of the subjects revealed a statistical significance (Table 8).

DISCUSSION:

Tobacco-related habits are highly prevalent among the Indian population. The chemical constituents of tobacco are carcinogenic and cause various mucosal lesions ranging from chewers mucosa to potentially malignant disorders that may progress to oral cancer. [5] Literature is abounding with reports of incidence of tobacco-related premalignant lesions, premalignant conditions, and oral malignancies, in the Indian population. [6-12] With the introduction of the term OPMDs in 2005 [1] to denote the precancerous lesions and conditions of the oral cavity, our study on the prevalence of oral PMDs in Indian population with high prevalence of tobacco and betel quid users is an attempt to observe the OPMDs among the Indian population, in terms of demographic characteristics, prevalence

of tobacco-related habits, and prevalence of OPMDs.

The predominance of male smokers in our study in the Lucknow population (Table 1) can be attributed to the social stigma associated with women smoking in the Indian society resulting in more male smokers. Though chewing is a common and more acceptable habit among women, the large number of male smokers and chewers combined together accounts for the higher percentage of male users in our study.

The predominance of chewing in our study (Table 2) can be explained by a multitude of factors. Chewing is more common owing to the ease of use at home/work, cost-effectiveness, and acceptance of usage for women in a society where women usually do not smoke. Further, pan chewing is part of a tradition, especially in North India where Lucknow is situated, during social gatherings, family functions, and after meals. Predominance of chewers also explains the high percentage of combined habits.

The factors discussed previously regarding the social stigma associated with smoking and the acceptance of chewing habit among women explains the striking predominance of chewing among women and high incidence of male chewers, smokers, and those with combined habits (Table 3). The high cost of cigarettes compared to chewing tobacco and the issues related to smoking in public would explain why

chewing is marginally ahead of smoking as the preferred habit in men.

Chewing, smoking, and combined habits, being more common in men in the 20-40 years age group, with a gradual waning of these habits with progression of age and a higher overall incidence of habits in the 40-60 age groups owing to the predominance of alcohol users in this age group can be explained. Peer pressure, mob culture, age-related curiosity, adolescent stress, and work pressure could explain the introduction to habits in the teenage and thus a high incidence of these habits in the 20-40 years age group. But, family responsibilities, increasing awareness, objection by family members, and health issues could contribute to decrease in smoking and chewing habits with age. Alcoholism, a costly addictive habit for a young male is now preferred by the middle-aged Indian male who enjoys more financial freedom, developing social status, and indulging in a urban party.

Women in India are bound by cultural values and marital prospects in the second and third decades of life; but beyond 40 years, women are more socially commanding and thus have the freedom to choose the means to de-stress from the monotony of work or home making. This could explain the preference of smoking, chewing, and combined habits in the 40-60 years age group.

A wide range of prevalence of precancerous lesions and conditions has been reported in various studies conducted in the Indian subcontinent among tobacco and betel quid users. [1] The extreme variations have been assumed to be the result of different study designs, the non-uniform criteria to define the habits and the lesions, and the bias in selecting the study subjects.

The prevalence of nearly 13 percent of OPMDs among the users in our study (Table 5) would mean that one out of ten users in Lucknow has a risk of acquiring an OPMD. Though our results cannot be directly translated into a social awareness statement considering the meager representative sample of the population, it can still serve as a deterrent to the users and encourage them to discontinue the habit.

In the absence of any previous study on the prevalence of OPMDs in India, we compared our results with the previous results by Amarasinghe et al (2010)[3], considering the similarity of the studies in terms of a questionnaire-based and clinical examination based cross-sectional and community-based random sampling study.

Amarasinghe et al³ had detected 102 oral PMDs among 1029 subjects. When weighted for over-sampling of the estate sector and of females, the prevalence of OPMD was estimated as 11.3 percent. Our sample size was double of theirs, at 2008 and the prevalence in our study was slightly higher compared to the

results of Amarasinghe et al. [2] Both these results reiterate the high risk of acquiring OPMDs associated with use of tobacco products and betel quid chewing.

Even though chewing was a more preferred habit in our study, OL associated with smoking was higher than OSF associated with chewing (Table 5). Our results could be directly correlated with the results of Amarasinghe et al³, who reported that OL was most common (8.9 percent), followed by OSF (1.7 percent) and OLP (0.7 percent). The predominance of OL could be because chewers of betel quid usually add tobacco as an ingredient and there are also a sizeable number of subjects with combined habits, thereby contributing to the relatively higher number of OLs.

A large number of OPMDs in males (Table 6) is owing to the high number of male users in our study. Our results are similar and comparable to the results of Amarasinghe et al. [3]

A high prevalence of OL among male users (Table 6) is directly related to the high incidence of smoking in men and a high prevalence of OSF among women, is similarly related to the chewing preference of women. Interestingly, OLP was seen more commonly among women than among men, a fact that could be attributed to hormonal and immunologic factors.

OSF has been consistently associated with the chewing habit and smoking has been implicated in the etiology of oral

leukoplakia. Smoking alone has not been known to contribute to OSF. These well-documented facts have been reiterated by our findings (Table 7). Further, the non-role of alcohol intake in the causation of OPMDs has also been confirmed by our findings. We confirmed the age preference of OSF and OL reported in the existing literature (Table 8).

As discussed previously, smoking is seen in the early age groups in men. Still, OPMDs associated with smoking such as OL were as seen more in the middle-age groups. This could be related to the carcinogenic mechanism wherein oral cancer evolves through the oncogenic pathway associated with tobacco usage and hence the delay in clinical presentation of the lesions.

The earlier manifestation of OSF in 20-40 years age group among male and female users could be due to the fact that OSF starts early and progressed much quicker than an oncogenic pathology, with reports of severe OSF reporting within 2 years of the habit.

CONCLUSION:

In conclusion, we report a high incidence of OPMDs in this population, associated with the smoking and betel-quid chewing habits. These habits being a part of the cultural and social characteristic of the Indian population and the malignant transformation potential of OPMDs implies serious health consequences for the future.

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TABLES:

Table 1. Distribution of age of study participants

Age	Males (n=1417)	Females (n=591)
20-40 yrs	396 (27.9%)	218 (36.9%)
40-60 yrs	967 (68.2%)	352 (59.6%)
>60 yrs	54 (3.8%)	21 (3.6%)

Table 2. Prevalence of tobacco habits among study subjects

Type of use of tobacco	Total (n=2008) (%)
Chewers	1067 (53.1%)
Smokers	412 (20.5%)
Alcohol users	39 (1.9%)
Combined habits	490 (24.4%)

Table 3. Prevalence of tobacco habits according to gender

Tobacco habits	Males (n=1417) (%)	Females (n=591) (%)	Z_c value	p value
Chewers	560 (39.5%)	507 (85.8%)	18.89	p<0.001
Smokers	369 (26.0%)	43 (7.3%)	9.43	p<0.001
Alcohol	30 (2.1%)	9 (1.5%)	0.70	p>0.05
Combined	458 (32.3%)	32 (5.4%)	12.74	p<0.001

Table 4. Association of tobacco habits with age and gender

Tobacco habits	Age	Males	Females	χ^2 value (DF=2)	P value
Chewers (Chart 5)	20-40 yrs	353 (63.0%)	129 (25.4%)	158.30	p<0.001
	40-60 yrs	191 (34.1%)	367 (72.4%)		
	>60 yrs	16 (2.9%)	11 (2.2%)		
Smokers (Chart 6)	20-40 yrs	274 (74.3%)	4 (9.3%)	78.94	p<0.001
	40-60 yrs	77 (20.9%)	27 (62.8%)		
	>60 yrs	18 (4.9%)	12 (27.9%)		
Alcohol (Chart 7)	20-40 yrs	7 (23.3%)	1 (11.1%)	6.96	0.031
	40-60 yrs	19 (63.3%)	3 (33.3%)		
	>60 yrs	4 (13.3%)	5 (55.6%)		
Combined (Chart 8)	20-40 yrs	309 (67.5%)	2 (6.3%)	69.25	p<0.001
	40-60 yrs	122 (26.6%)	17 (53.1%)		
	>60 yrs	27 (5.9%)	13 (40.6%)		

Table 5. Prevalence of OPMDs among study subjects

Types of OPMDs	Total (n=2008) (%)
Oral leukoplakia	138 (6.9%)
Oral submucous fibrosis	109 (5.4%)
Oral lichen planus	18 (0.9%)

Table 6. Distribution of OPMDs according to gender

Types of OPMDs	Males (n=228)	Females (n=37)	Zc value	p value
Oral leukoplakia	131 (57.5%)	7 (18.9%)	4.18	p<0.001
Oral submucous fibrosis	85 (37.3%)	24 (64.9%)	2.98	p<0.01
Oral lichen planus	12 (5.3%)	6 (16.2%)	2.10	p<0.05

Table 7. Prevalence of OPMDs according to tobacco habits

OPMDs	Chewers	Smokers	Alcohol users	Combined habits	χ^2 value (DF=4)	p value
Oral leukoplakia	7 (0.3%)	51 (2.5%)	0 (0.0%)	80 (4.0%)		
Oral submucous fibrosis	74 (3.7%)	0 (0.0%)	0 (0.0%)	35 (1.7%)	137.60	p<0.001
Oral lichen planus	15 (0.7%)	0 (0.0%)	0 (0.0%)	3 (0.1%)		

Table 8. Association of OPMDs with age and gender

OPMDs	20-40 yrs		40-60 yrs		>60 yrs		χ^2 value (DF=5)	p value
	M	F	M	F	M	F		
Oral leukoplakia	45 (2.2%)	2 (0.1%)	59 (2.9%)	4 (0.2%)	27 (1.3%)	1 (0.0%)	135.60	p<0.001
Oral submucous fibrosis	53 (2.6%)	18 (0.9%)	28 (1.4%)	6 (0.3%)	4 (0.2%)	0 (0.0%)	110.50	p<0.001
Oral lichen planus	11 (0.5%)	5 (0.2%)	1 (0.0%)	1 (0.0%)	0 (0.0%)	0 (0.0%)	31.38	p<0.001