ISSN: 0975-3583,0976-2833 VOL12, ISSUE 10, 2021

PREVALENCE OF TOBACCO USE, ORAL POTENTIALLY MALIGNANT DISORDERS AND THEIR ASSOCIATED FACTORS AMONGST ADULT FEMALES IN A RURAL AREA OF KANPUR NAGAR DISTRICT: A CROSS-SECTIONAL STUDY"

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ABSTRACT

Background: Tobacco consumption is the single most important avoidable risk factor in the development of Oral Potentially Malignant Disorders (OPMD). This survey was conducted to investigate the prevalence of tobacco use, OPMD and related factors among rural women in Kanpur Nagar district.

Aims & objectives: To assess the prevalence of current tobacco use and Oral Potentially Malignant Disorders (OPMD) amongst rural women and to assess their association in this population.

Materials & Methods: A Cross Sectional-survey was conducted among 350 adult women in a rural area of Bithoor Primary Health Centre (PHC) of Kanpur Nagar district using a ***2 Stage Cluster Random Sampling method.***

Data was collected on tobacco use ***using Modified Global Adult Tobacco Survey (GATS) Proforma 2020***, risk factors of Oral Cancer and clinical examination was done for evaluating the presence of OPMD. The results were analysed using SPSS version 23.0.

Results: In our study, among all the participants, 131(37.4%) were tobacco consumers. Amongst these, 28 (8.0%) were smoking, 97 (27.7%) consumed smokeless form of tobacco and 6(1.7%) had combination of both the types. Twenty-six (7.4%) participants were suspected to have precancerous lesions on examination. All 26(19.8%) participants who had OPMD were current tobacco users and high prevalence (65.4%) of oral mucosal lesions was seen in tobacco chewers than tobacco smokers (19.2%)

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Conclusion: In our study, the smokeless form of tobacco consumption was high among rural women which was found to be positively associated with OPMD. The women of rural areas should be made more aware of the high risk of malignancy in oral lesions induced by tobacco use.

Keywords: Tobacco use, Oral lesion, Prevalence, Rural women

INTRODUCTION

Tobacco consumption is the single most important avoidable risk factor in the development of Oral Potentially Malignant Disorders (OPMD). In India, there are primarily two ways to consume tobacco: smoking and smokeless. Tobacco is most commonly smoked in the form of cigarettes or bidis. Other smoking products include hookah, shisha, cigars, and pipes.[1]

Smokeless form includes betel quid/ paan (betel leaf enclosing sliced areca nut, catechu, lime and several other spices which may or may not contain tobacco). Gutka is a mixture of powdered tobacco, areca nut, and slaked lime (aqueous calcium hydroxide). Some other forms of smokeless tobacco products commonly used in the Indian subcontinent are qiwam, mawa, khaini, zarda which are mixtures of powdered tobacco and slaked lime and mishri, a powdered tobacco product that is applied to the gums.[2]

Gul, often known as "tobacco-based dentifrice," is a popular type of smokeless tobacco that is made by roasting and powdering tobacco. It is indigenous to rural India and is primarily utilised by women. In addition to being used to clean teeth, Gul is a cheap, readily available remedy for the alleviation of acute dental pain in rural women who apply it repeatedly daily to the impacted teeth and nearby gum/mucosa, frequently developing a dependence on it.[3,4]

Oral cancer and precancer have been strongly correlated with smoking and chewing tobacco.[5]

Oral Potentially Malignant Disorders (OPMD) is defined by World Health Organization (**WHO)** as the risk of malignancy being present in a lesion or condition either during the time of initial diagnosis or at a future date. [6]

The most common oral potentially malignant disorders are Leukoplakia, Erythroplakia, Lichen planus, Oral Submucous Fibrosis, and others include Oral Candidiasis, Reverse smoker's palate, Chelitis Glandularis and Proliferative Verrucous Leukoplakia, Lupus Erythematous etc. [7]

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A large number of the patients with pre malignant lesions progress to oral cancer in due course of time which includes Leukoplakia, Erythroplakia, and Sub Mucous Fibrosis among others. Potentially malignant oral lesions and their consequences severely reduce people's quality of life on a social and financial level. Thus, primary prevention is thought to be the most economically sensible strategy for stopping the development of oral cancer. By modifying risk factors, it seeks to decrease the occurrence of OPMD.[8]

The most frequent risk factors for oral lesions include smoking, chewing tobacco, gutkha, betel nuts in quid form (pan), alcohol, hot foods, malnutrition, poor oral hygiene, malocclusion, sharp broken teeth, ill-fitting dentures, and others.[9] The majority of the general population are not well informed about the risks associated with oral conditions that could lead to cancer and how to guard against them. Preventing malignant transformation will require examining the prevalence of oral mucosal ulcers.[8]

The social and cultural obstacles that traditionally prevented many women from smoking are disappearing, and tobacco use is prevalent in rural areas. Despite the fact that smoking by women is socially and culturally unacceptable in India, women forms a vulnerable population due to a number of factors such as social injustice, poverty, hunger, and illiteracy and these factors increase the frequency of tobacco use among them. The above-mentioned factors make the issue worse, and there is little information available about tobacco use among women.

Hence, this research will be undertaken to assess the prevalence of tobacco use and oral potentially malignant disorders and its associated factors among females of a rural area of Kanpur Nagar district.

AIM AND OBJECTIVES

AIM:

To assess the factors associated with the prevalence of tobacco use and OPMD in females of a rural area of Primary Health Centre (PHC) Bithoor in Kanpur Nagar District.

OBJECTIVES OF THE STUDY:

1. To assess the prevalence of current tobacco use including knowledge, attitude and practices of tobacco use amongst rural women.
2. To assess the prevalence of Oral Potentially Malignant Disorders in this population

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3. To assess possible factors associated with tobacco consumption and occurrence of Oral Potentially Malignant Disorders such as age, educational status, income, oral hygiene practices, marital status, type of family, type of diet, employment, etc.
4. To find the association between current tobacco use, associated factors and Oral Potentially Malignant Disorders in this population.

MATERIAL AND METHODS

Study Area: The study was conducted in five villages under Bithoor Primary Health Centre (PHC), Kanpur Nagar District.

Source of data: Adult women in the age group above 18 years, in a rural area of Bithoor Primary Health Centre (PHC) of Kanpur Nagar district. Data including number of villages under Bithoor PHC area was available from the Block office.

Study design and study population: This is a community-based cross sectional-survey conducted among adult women in a rural area of Bithoor Primary Health Centre (PHC) of Kanpur Nagar district

Ethical approval for the study: the study proposal was submitted for approval and clearance to the Institutional Review Board of Rama Dental College, Hospital and Research Centre, Kanpur, prior to the start of the study. The study protocol was reviewed by the Ethical Committee and the ethical clearance was granted for the same.

Permission was taken from the authorities of Bithoor PHC and Gram Panchayat leader of each village were contacted and informed about the study.

A detailed information sheet (in Hindi and English language) was presented to the participants to explain the purpose of the study, procedure, benefits and risks to the participant of the study. For the participants who were illiterate, the information sheet was read aloud by the investigator. Following which, written Informed consent was taken from the women who were willing to participate in the study.

Sample size: According to a previous study, the prevalence of oral tobacco use among women in a rural setting was 28%.With confidence interval of 95%, fixed precision of 5%, the sample size was calculated by precision of 5%, the sample size was calculated by : $\mathbf{n=Z^2pq / d^2}$

The Calculated sample size was 309. However, sample size of **350** was taken in order to improve the precision, and account for unknown errors.

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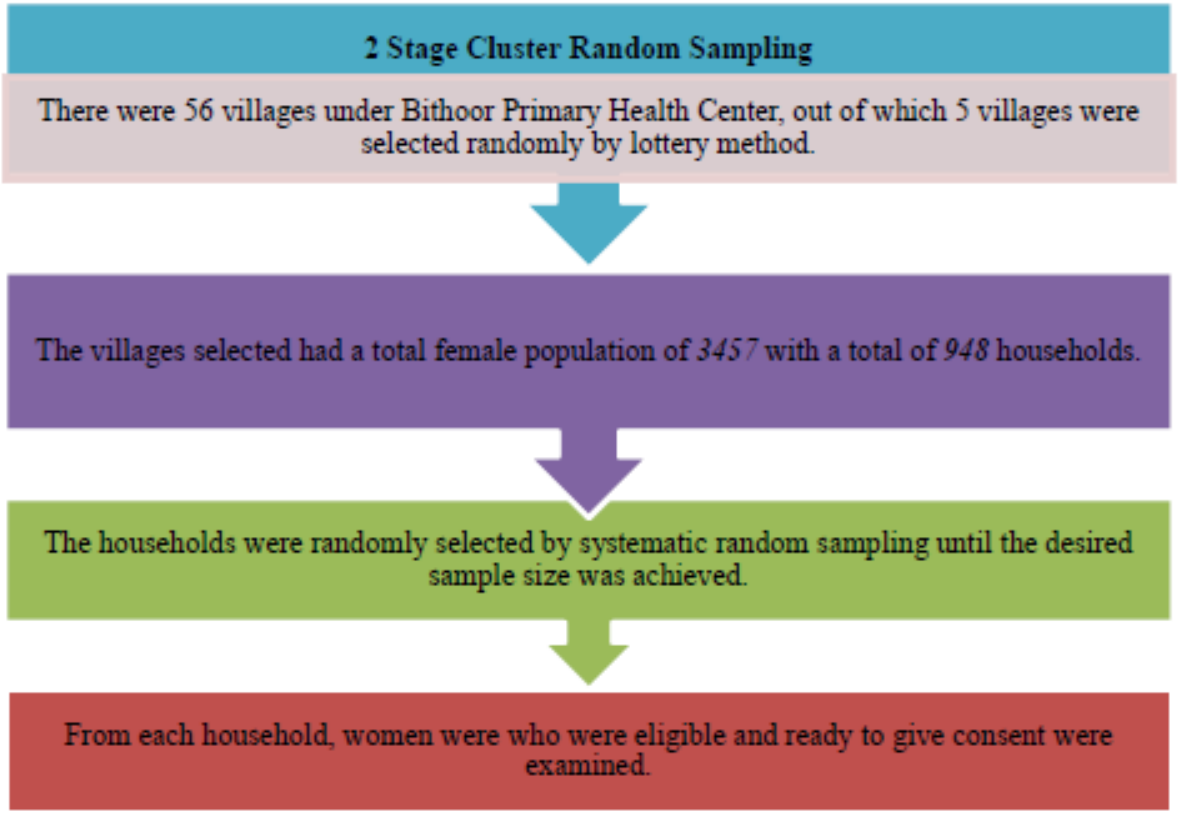
SAMPLING METHOD



Age stratification was done by dividing the population into the following homogenous age groups. Sample proportionate to size was selected from each group, so as to achieve equal representation.

1. **18-30 years**
2. **31-40 years**
3. **41-50 years**
4. **51-60 years**
5. **>61 years of age**

Inclusion criteria

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- Women >18 years of age residing in villages under Bithoor PHC rural area of Kanpur Nagar District.
- Women who were able to respond to the questionnaire.
- Women who were willing to participate in the study and for whom informed consent was available

Exclusion criteria

- Seriously sick or moribund patients who were unable to answer the questionnaire.

Data collection: The subjects were interviewed by the investigator, and the following data was collected through a structured questionnaire and through clinical examination.

Questionnaire:

Section 1- Socio-demographic details.

Demographic characteristics includes name, age gender, Fathers name/Husbands name, type of family, No of family members, Socioeconomic status was classified according to **BG Prasad** [9] classification based upon per capita income, type of diet, educational status, Occupation, Marital status and Tobacco history of the family members.

Data regarding Tobacco use and habits was collected by using **a Modified Global Adult Tobacco Survey (GATS) questionnaire.**[10] this included data on-

Section 2- This section includes thirteen questions of knowledge and perception regarding Tobacco use

Section 3- This section includes six questions of Smoking tobacco and Smokeless tobacco respectively which included current tobacco users, past tobacco users, Initiation and influence for the consumption of tobacco use. Others included:

- Type of tobacco preparation
- Amount of tobacco use
- Frequency of tobacco consumption
- Duration of tobacco use

The following definitions were taken into consideration while interviewing the subject: [11]

- **Current/Daily smokeless user** means the person uses at least one smokeless tobacco product every day, over a period of one month or more.

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- **Current/Daily smoker** means the person currently smokes at least one tobacco product every day, over a period of one month or more.
- **Former daily smokeless tobacco user** Person does not currently use smokeless tobacco but had previously used smokeless tobacco products daily over a period of one month or more.
- **Former daily smoker Person** is currently a non-smoker but had previously smoked daily over a period of one month or more.

Section 4- This section includes six questions regarding risk factors of oral cancer

Section 5- Clinical Examination: Visual examination of oral cavity was done using mouth mirror and probe. Visual examination was done using a torch, magnifying glass and palpation for thickened lesions was done on all the study subjects. Clinical Recording was done for recording white and red lesions.

Oral Examination- Rural women were examined on an ordinary chair under natural day light with the help of torch, magnifying glass and palpation for thickened lesions was done on all the study subjects by a single calibrated examiner.

At the end of the interview, all study subjects were informed about the harmful effects of tobacco use. Study subjects with suspected oral precancerous lesions were referred to Rama Dental College Hospital and Research Centre for further counseling and evaluation.

Statistical Analysis:

The data was entered in Microsoft Excel and was analyzed by using statistical software Statistical Package for Social Sciences (SPSS) version 23.0 for Windows. All study variables were described by using descriptive statistical methods like frequencies, percentages. The various factors and their association with primary study variables were studied using Chi square test. A p-value less than 0.05 were considered statistically significant.

RESULTS

Table 1: Distribution of study subject according to Knowledge and perceptions regarding tobacco use

This table shows the frequency distribution of study subjects according to knowledge and perceptions regarding tobacco use. Among all the participants, 228 (65.1%) women knew or believe, 44(12.6%) do not believe, 78(22.3%) don’t know that using tobacco causes serious

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harmful effects to overall health. Majority of the women 228(65.1%) knew that using tobacco causes serious harmful effects to overall health.

Table 1: Distribution of study subject according to Knowledge and perceptions regarding tobacco use

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Knowledge regarding tobacco use	Yes		No		Dont know		Refused		Total	
	N	%	N	%	N	%	N	%	N	%
1) Do you know or believe that using tobacco causes serious harmful effects to your overall health?	228	65.1%	44	12.6%	78	22.3%	0	0.0%	350	100.0%
2) Do you think tobacco causes addiction?	276	78.9%	16	4.6%	58	16.6%	0	0.0%	350	100.0%
3) Does smoking/chewing tobacco causes Oral cancer?	254	72.6%	22	6.3%	74	21.1%	0	0.0%	350	100.0%
4) Does smoking/chewing tobacco causes heart diseases?	157	44.9%	4	1.1%	189	54.0%	0	0.0%	350	100.0%
5) Does smoking /chewing tobacco cause lung disease?	217	62.0%	6	1.7%	127	36.3%	0	0.0%	350	100.0%
6) Does smoking /chewing tobacco have ill effects on fetus?	111	31.7%	22	6.3%	217	62.0%	0	0.0%	350	100.0%
7) Does smoking /chewing tobacco have a bad influence on children?	234	66.9%	34	9.7%	82	23.4%	0	0.0%	350	100.0%
8) Does occasional smoking/chewing tobacco have ill effects?	259	74.0%	38	10.9%	53	15.1%	0	0.0%	350	100.0%
9) As far as you know, does your religion discourage smoking?	165	47.1%	31	8.9%	154	44.0%	0	0.0%	350	100.0%
10) Does smoking /chewing tobacco relieve boredom?	200	57.1%	52	14.9%	98	28.0%	0	0.0%	350	100.0%
11) Does smoking /chewing tobacco cause relaxation?	227	64.9%	18	5.1%	105	30.0%	0	0.0%	350	100.0%
12) Does smoking/chewing tobacco relieve stress?	224	64.0%	18	5.1%	108	30.9%	0	0.0%	350	100.0%
13) Does smoking /chewing tobacco help in losing weight?	31	8.9%	45	12.9%	274	78.3%	0	0.0%	350	100.0%

Table 2: Distribution of study subjects according to form of smokeless tobacco

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This table shows the frequency distribution of study subjects according to form of smokeless tobacco. Among the participants, two women (0.6%) were consuming Betel quid with tobacco, five (1.4%) chewing tobacco, fifty eight (16.6%) pan masala, forty (11.4%) used tobacco dentrifice (Tambaku 'Gul' manjan) and two women (0.6%) were consuming khaini.

Table 2: Distribution of study subjects according to form of smokeless tobacco

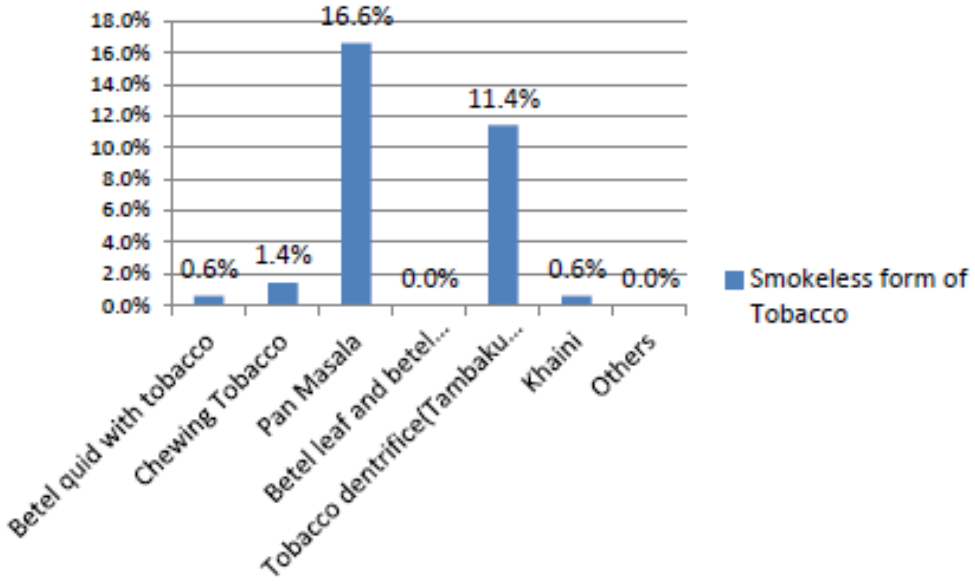
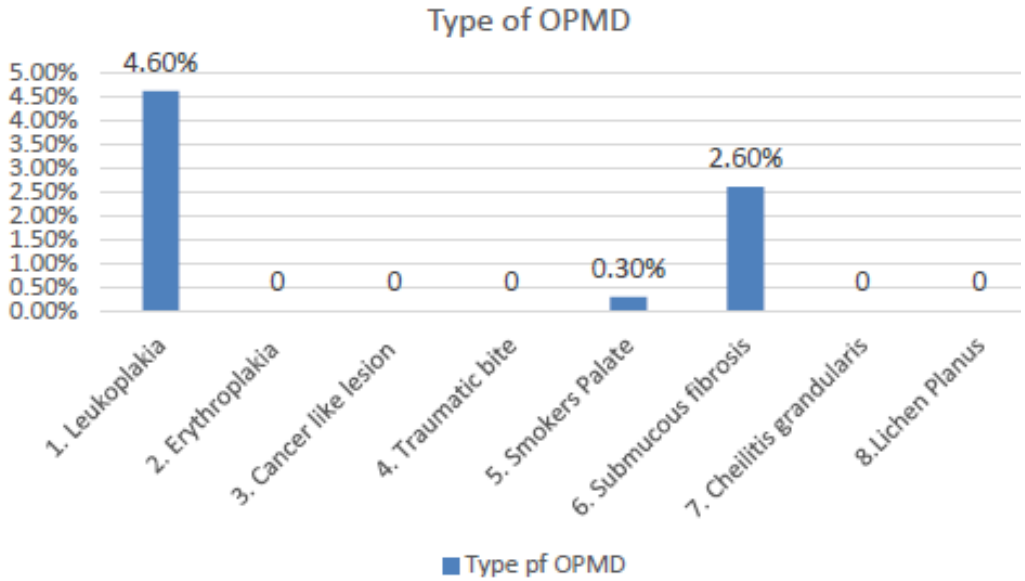


Figure 3: Prevalence of type of OPMD in the study population



DISCUSSION

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The present study was conducted to assess the prevalence of Tobacco Use, Oral Potentially Malignant Disorders and their Associated Factors Amongst Adult Females in A Rural Area of Kanpur Nagar District.

In our study, maximum number of participants were in the age group of 41-50 years (34.0%), whereas, in a study conducted by Saraswathi et al [12] maximum number of the participants were in the age group of 21-30 years. Most of the participants were living in a nuclear family, which was similar to the study conducted by Das R and Baidya S [13]. Illteracy (59.7%) and unemployment (79.1%) were much higher in this population, as compared to the findings of Hasan et al.[18] Marital status (80.9% married) was similar to the study conducted by Tiwari et al[15] and Hossain MS et al.[20]

In the present study, most of the participants were well aware of harmful effects of Tobacco use as 72.6% of the women knew that smoking or chewing tobacco causes oral cancer. Similar results were found in the study conducted by Elango et al.[21] where 70% of the women attributed smoking as the cause of oral cancer, whereas, 33.90 % of the participants were aware that tobacco leads to oral cancer as per in previous literature.[13]

The overall prevalence of current tobacco use was found to be 37.4%. These findings are considerably higher than *Global Adult Tobacco Survey-2 (GATS-2)*[11] India survey conducted in 2016–2017 where they reported 14.2%prevalence of current tobacco use among women. These findings are also appreciably higher than 6.8% prevalence that was reported in *National Family Health Survey-4 (NFHS-4)*[18] conducted in 2015-16. In the present study, the prevalence of smoking was found to be 9.7% which was similar than that reported in GATS-2 India report, that is, 10.7%. However, the prevalence of smokeless tobacco use in our study was 29.4% which is slightly higher to the findings of GATS-2 India survey, that is, 21.4%.

Among the participants, 64.7% had started to smoke when they were in the age group of 31-40 years and 58.8% of the participants who were consuming smokeless form were also in the age group of 31-40 years which was in contrast with the GATS-2.

survey where the most of the participants who started to consume tobacco in any form aged between 20-34 years.

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In the present study, the most common reason cited for tobacco use (smoking and smokeless) was reasons like tooth pain, pregnancy and after child birth which was in contrast with the study conducted by Das R [13] where women decision to start consuming tobacco was more likely to be influenced by their friends.

Among the smoking form of tobacco, Bidi was the most common form among rural women which was similar to the study conducted in Kanpur by Katiyar et al.36 Among the smokeless form of tobacco, Pan Masala was the most common form of tobacco followed by tambaku dentrifice (gul) among women which was similar to the studies conducted in Uttar Pradesh by Srivastava et al [3], Nethan et al. [4] and Pratinidhi et al. [20] and in contrast with the study conducted by Katiyar et al.[19]

Majority of the participants (52.9%) were smoking 1-5 bidis per day which was similar with the GATS-2 survey where participants were smoking bidis <5 per day.

Age, socioeconomic status, diet, level of education and marital status were found to be significant risk factors for tobacco use in our study. It was seen that elderly women were consuming more tobacco (61.1%) as compared to younger participants. It was found that women in the lower middle socioeconomic status group had higher prevalence of tobacco consumption than women who were from the middle to high socioeconomic status, the prevalence of tobacco use was found to be more among the participants who were currently married (92.4%) which was in contrast with study conducted by Shrivastava SR.[21] The prevalence of tobacco use was found to be more among subjects who were illiterate 72.5% which was similar to the study conducted by Shrivastava SR and Rani M .[10]

Tobacco use was significantly associated with the occurrence of OPMD in our study, which was similar to the study done by Katiyar et al. [19] and Jaiswal et al.[22] In this study, high prevalence (65.4%) of oral mucosal lesions was seen in tobacco chewers than tobacco smokers (19.2%) which was similar with the study conducted by Kothathi et al.[23]

In our study, the prevalence of OPMD was 7.4% which was similar to the study conducted by Katiyar et al.[19] where the prevalence of OPMD was 9%. Age and Level of education were significant demographic risk factors for the development of OPMD among women in our study.

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Around 69.2% cases of OPMD occurred in the age group 41-50 years which was in contrast with the study conducted by Katiyar et al.36 and Kumar et al. [8]

In the current study, the most common OPMD was Leukoplakia in 4.6% study participants, followed by Oral Submucous Fibrosis in 2.6% and smokers palate in one woman, which was similar to the study conducted by Faiz et al.[24]

In the second and third decades of life, women in India are constrained by cultural expectations and marriage prospects; however, after the age of 40, women are more socially dominant and have the freedom to choose how to relieve stress from housework. This may account for the predilection for smoking, chewing, and mixed behaviours among those in the 41–50 age range.

The strength of our study consists in its capacity to assess the state of tobacco-related oral lesions, which in turn helps in formulating a strategy to avoid tobacco-related oral lesions such possibly malignant illnesses by early identification and primary prevention. This study will be in addition of data in helping to plan gender specific intervention.

One of the limitations was the small sample size because fewer villages were chosen for the investigation, which resulted in low prevalence of tobacco use and OPMD, potential for social desirability bias because smoking by women is not culturally acceptable in India, which led to an underestimation of prevalence. There is a disparity between gender among the rural population of India due to mobility constraints faced by women in accessing health services and also because Indian women frequently underreport illnesses. Therefore, women-specific health education and quitting programmes should be more in rural areas.

CONCLUSION

The smokeless form of tobacco consumption was high among rural women which were found to be positively associated with OPMD. The high prevalence of oral mucosal lesions was seen in tobacco chewers than tobacco smokers. Advanced age, lower level of educational status and marital status were found to be major determinants for tobacco consumption among rural women. The prevalence of OPMD of oral soft tissues is closely associated with advancing age and lower level of educational status. The women of rural areas should be made more aware of the high risk of malignancy in oral lesions induced by tobacco use. Tailored cessation

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interventions that address these risk factors should be developed and further evaluated in an attempt to reduce disparities in tobacco usage prevalence among this vulnerable group of women. The study conducted by us made us realize that steps needed to be taken to control the tobacco epidemic among women.

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