

ORIGINAL PAPERS

Role of Tobacco Consumption Habits in the Causation of Precancerous Lesions: A Cross Sectional Study

Nisarg SHAH¹, Yash SHAH¹, Drupad SUPEDA¹, Pawan TADWALA¹, Maulik THAKER¹, Jatin CHHAYA², Niraj PANDIT³

Abstract

Oral carcinoma is quite common and increasing trend in India and worldwide. Smoking and smokeless tobacco both are increasing worldwide. The common oral precancerous lesions are oral leukoplakia, erythroplakia, nicotina palati and oral sub mucous fibrosis (OSMF). Screening is best tool to find out such lesions. The current study is conducted to know the prevalence of tobacco consumption and also to examine oral cavity of tobacco consumer to detect precancerous lesions among the staff. **Method:** The present study was cross sectional study carried out tertiary care hospital staff. The study was conducted over a period of 6 month from May 2017 to October 2017. Ethical clearance for study was obtained from Institutional Ethical Committee. The staff members of class 3 and class 4 of hospital were taken as a study participants involving both of sex and who provided written informed consent. Sample of 120 staff members were enrolled for the study from provided sampling frame with the use of random sampling method. Study participants with previous history of hospital admission for any systemic illness, immunodeficiency or immunosuppressive patients, and participants who already diagnosed to have malignant cancer lesions in any part of body were excluded. **Result:** Of 120 study participants, 40% were belongs to 31 – 40 years of age group and majority were male (80%) and belonged to Hindu (90.83%) religion. The prevalence of tobacco consumption in any of form is 85%; of them 43.33% used smokeless tobacco and 10.83% used to with smoking and 30.83% had both forms of tobacco. Oral Sub Mucosal Fibrosis (OSMF) was the most common (70.58%) precancerous lesion found in the present study, followed by leukoplakia (16.67%). **Conclusion:** Current study revealed the high prevalence. There is urgent need to plan de-addiction at various level. Also those having the precancerous lesion need to warn and treat accordingly.

Keywords: smokeless tobacco, precancerous lesion, oral sub-mucous fibrosis, leukoplakia.

INTRODUCTION

Oral carcinoma, is a widespread health problem with increasing incidence, prevalence and mortality rates, which is also the eighth most common cancer worldwide¹. In India, every 20 person per 100000 population are suffering of oral cancer, which is almost 30% of all type of total cancer, and not limiting to that, over 5 human lives are killed in India every hour everyday only due to oral cancer². India is among the few countries, which have highest incidence of oral cancer in

the world³. Smoking, smokeless tobacco also called pan masal (assortment of areca nut, lime, catechu, and sweetening, colouring, and flavouring things, with or without tobacco), pan (betel leaf with areca nut and slaked lime paste), and so on are prevalent in different parts of the world along with alcohol drinking are some of predisposing factors that can cause precancerous lesions and also malignant oral cancers^{4,5}.

A precancerous condition is a state associated with having certain conditions or lesions involving morphologically altered cells, which are more likely to develop

¹SBKS MIRC, Sumandeep Vidyapeeth deemed to be university, Piparia Vadodara

²Department of Community Medicine, GMRES, Junaghadh.

³Department of Community Medicine, SBKS MIRC, Sumandeep Vidyapeeth deemed to be university, Piparia Vadodara

Corresponding author:

Niraj PANDIT, SBKS MIRC, Sumandeep Vidyapeeth deemed to be university, Piparia Vadodara

E-mail: drniraj74@gmail.com

in cancerous condition as compared to normal counterpart⁶. The most common oral precancerous lesions are : oral leukoplakia, erythroplakia, nicotina palati and oral sub mucous fibrosis (OSMF). The causes of precancerous lesions of oral mucosa are not well-understood, but risk factors such as smokeless tobacco chewing, tobacco smoking, and alcohol play an important role in development of potentially premalignant oral lesions⁷.

India is continuously struggling to curb the menace of tobacco, in both of forms smoking and smokeless as well. The Global Adult Tobacco Survey – India (GATS) also confirms 35% of the adults above the age group of 15 years consume smoke or smokeless tobacco, with 48% of total men and 20% of total women consume tobacco in either of form⁸. It is not wrong to predict here, “Indians are not chewing tobacco, but tobacco chewing Indians”, as we are remains one of the biggest consumers of tobacco. That is why we can hypothesise more percentage of pre-cancerous lesions among adult Indians; special who consume tobacco frequently.

Screening of apparently healthy individual who consume tobacco can reveal precancerous lesion at earliest stage and early treatment results in most effective outcome in terms of survival.⁹ Examine oral cavity for screening is easy to do procedure and also no any discomfortable procedures are involved in screening. Now a days, majority of times screening done only for outdoor patients only, leaving behind apparently health individual who might have precancerous lesions. Hence the current study is proposed to know the prevalence of tobacco consumption and also to examine oral cavity of tobacco consumer to detect precancerous lesions among the staff of Sumandee Vidyapeeth, so appropriate preventive strategy can plan in future.

MATERIALS AND METHODOLOGY

The present study was cross sectional study carried out at Dhiraj Hospital attached with Sumandee Vidyapeeth, Piparia-Vadodara. The study was conducted over a period of 6 month from May 2017 to October 2017. Ethical clearance for study was obtained from Sumandee Vidyapeeth Institutional Ethical Committee (SVIEC).

The staff members of class 3 and class 4 of Sumandee Vidyapeeth was taken as a study participants involving both of sex and who provided written informed consent. Due to resource constraint, sample

of 120 staff members were enrolled for the study from provided sampling frame with the use of random sampling method. Study participants with previous history of hospital admission for any systemic illness, immunodeficiency or immunosuppressive patients, and participants who already diagnosed to have malignant cancer lesions in any part of body were excluded.

The participants were explained with the importance of study and confidentiality of information provided by them. The data regarding age, sex, income, habits related to smoking/smokeless tobacco/alcohol consumption were collected by interview method using predesigned and pretested questionnaire. Oral cavity examination was done using mouth mirror to identify precancerous lesions by clinically only; no any incisional or punch biopsy was planned as a study part.

Data compilation was done and entered in spread sheet of Microsoft Excel 2007. Excel data sheet exported to and analysed with the help of SPSS version 16. Descriptive statistics were calculated. Chi-square test and binary logistic regression analysis were used for comparisons. Statistical significance was set at $P \leq 0.05$.

RESULT

Table 1: Demographic details of study participants (n = 120)

Variable	n (%)
Age	
20-30	39 (32.50%)
31-40	48 (40.00%)
41-50	17 (14.16%)
51-60	13 (10.83%)
61-70	3 (2.5%)
Sex	
Male	96 (80%)
Female	24 (20%)
Religion	
Hindu	108 (90.83%)
Muslim	12 (9.17%)

Out of total 120 study participants, 40% were belongs to 31 – 40 years of age group and majority were male (80%) and belonged to Hindu (90.83%) religion.

Table 2: Habits of study participants

Variables	n (%)
Tobacco consumption prevalence (n = 120)	
Smoking	13 (10.83%)
Smokeless tobacco	52 (43.33%)
Both	37 (30.83%)
None	18 (15.00%)
Duration of Tobacco consumption (n = 102)	
1-10yrs	65 (63.73%)
11-20yrs	27 (26.47%)
21-30yrs	6 (5.88%)
31-40yrs	4 (3.92%)

Out of 120 study participants, 18 (15%) were not consuming tobacco in any of form. So prevalence of tobacco consumption in any of form is 85%. Among the study participants, who were habitual of tobacco consumption, 43.33% used smokeless tobacco, while 10.83% were used to with smoking and 30.83% had habits of consumption of both forms of tobacco. Majority (63.73%) of them started to consume tobacco within their last 10 years of span.

Table 3: Precancerous lesion among tobacco consumers (n = 102)

Type of lesions*	N	%
Oral Sub Mucosal Fibrosis (OSMF)	72	70.59
Leukoplakia	17	16.67
Erythroplakia	12	11.76

*Multiple answers can be possible

Oral Sub Mucosal Fibrosis (OSMF) was the most common (70.58%) precancerous lesion found in the present study, followed by leukoplakia (16.67%).

Table 4: Prevalence of lesion among tobacco consumer and its association with duration

Tobacco consumption forms	OSMF	Erythroplakia	Leukoplakia
Smoking (n = 13)	4 (30.76%)	0	0
Smokeless tobacco (n = 52)	37 (71.15%)	4 (7.69%)	5 (9.61%)
Both form (n = 37)	31 (83.78%)	8 (21.62%)	12 (32.43%)
Total (n =102)	72 (70.59%)	12 (16.67%)	17 (11.76%)
Duration of tobacco*			
Less than 10 years	29 (40.27%)	3 (25.00%)	5 (29.41%)
Greater than 10 years	43 (59.73%)	9 (75.00%)	12 (70.59%)

*Yates' chi-square: 0.692, p – value: 0.7075 (not significant)

Prevalence of OSMF was 30.76%, 71.15% and 83.78% among the consumer of tobacco; smokers, smokeless tobacco consumer and consumer of both type of tobacco form respectively. Prevalence of erythroplakia was 7.69% and 21.62% among consumer of smokeless tobacco and among whom who consumed both form of tobacco respectively. The same way prevalence of leukoplakia was 9.61% and 32.43% among consumer of smokeless tobacco and among whom who consumed both form of tobacco respectively.

Table 5: Effects of smokeless and smoking tobacco consumption on oral precancerous lesions by logistic regression analysis

	B	S.E.	Wald	df	Sig.	Exp (B)
Smokeless tobacco	2.822	.551	26.190	1	.000	16.809
Smoking	1.038	.492	4.441	1	.035	2.823
Constant	-5.777	1.214	22.645	1	.000	.003

Logistic regression was performed in order to assess whether smokeless and smoking tobacco was associated with oral precancerous conditions or not. Based on the analysis a statistically significant association with oral precancerous lesions with smokeless and smoking tobacco (P < 0.05) was observed.

DISCUSSION

In the present study, majority of participants (40%) were in the age group of 31–40 years, while results of other studies shows more younger age of study participants, where 46.10% and 41.6% of the participants belonged to age group of 21–30 years (4,10) in the same type of studies. In our study males were 80% and females were 20%. Similar distribution of sex was seen in the study conducted at Pakistan in which males were greater in number compared to female (11).

In the present study, out of 120 participants, 102 (85%) were tobacco consumer of any form along with prevalence of smoking, smokeless tobacco and both form of tobacco was 10.83%, 43.33% and 30.83% respectively. The prevalence of tobacco consumption was high in our study as compared with study done in North Gujarat, regarding the habit of tobacco use where, 21% were smokers, 42% were tobacco chewers, 11% were smokers and chewers (12). Similar study that was done in Belgaum showed the 27.61% (232/840) participants had habits of consuming tobacco forms.

In the present study, majority (63.73%) of participants started to consume tobacco within their last 10 years of span. Logistic regression in the present study was clearly indicated that both smokeless and smoking habit has a predominant role in the occurrence of precancerous lesions. Several studies have highlighted that tobacco in various forms such as chewing, smoking cigarettes and beedis as an important etiologic factor in the development of precancerous lesions(13–15).

Considering precancerous lesion among tobacco consumers, OSMF, erythroplakia, and leukoplakia showed an overall 70.59%, 16.67%, and 11.76% prevalence respectively. Similar study that was done in Belgaum to know the prevalence of oral lesions, it was seen that the prevalence of OSMF, erythroplakia, and leukoplakia was 35%, 1.92% and 3.84%(4). High prevalence of cancer in current study can be explained by higher in number of tobacco product consumption, but limitation of study was that we did not include daily frequency of tobacco products in while planning of study.

CONCLUSION

Logistic regression analysis supports hypothesis of having of precancerous lesion among tobacco consumers, which has potentials to convert in to malignant lesion if proper precautionary steps not to be followed. Ideally substantiation role of smoking and smokeless tobacco can be proved by community based prospective studies and interventional studies. Prevalence rate of precancerous lesions of this cross sectional study among tobacco consumers would aid insights for successive studies.

References

1. Gaphor SM, Sabri ZA. Prevalence of oral premalignant and malignant Lesions among referred Kurdish patients Attending Department of Oral and Maxillofacial in Sulaimani Teaching Hospital. *iosrjournals*. 2014;13(2):32–6.
2. Varishtha A. Prevalence of Oral Cancer in India. *J Pharm Sci Res*. 2015;Vol. 7(10):845–8.
3. Gupta S, Singh R, Gupta OP, Tripathi A. Prevalence of oral cancer and pre-cancerous lesions and the association with numerous risk factors in North India: A hospital based study. *Natl J Maxillofac Surg*. 2014;5(2):142–8.
4. Narasannavar A, Wantamutte A. Prevalence of oral precancerous lesions and conditions among tobacco consumers in rural population around Belgaum. A community based cross sectional study. [Internet]. [cited 2018 May 10]. Available from: https://www.researchgate.net/publication/271259568-Prevalence_of_oral_precancerous_lesions_and_conditions_among_tobacco_consumers_in_rural_population_around_Belgaum_A_community_based_cross_sectional_study
5. Chhaya J, Devalia J, Kedia G. Prevalence of Risk Factors and its Association with Non-Communicable Disease among the Faculty Members of Teaching Institute of Ahmedabad City, Gujarat: A Cross-Sectional Study. *Int J Sci Stud*. 2015;3(8):159–62.
6. Precancerous condition. In: Wikipedia [Internet]. 2018 [cited 2018 May 21]. Available from: https://en.wikipedia.org/w/index.php?title=Precancerous_condition&oldid=841451880
7. Yardimci G, Kutlubay Z, Engin B, Tuzun Y. Precancerous lesions of oral mucosa. *World J Clin Cases WJCC*. 2014 Dec 16;2(12):866–72.
8. Smokeless tobacco is chewing up India [Internet]. [cited 2018 May 21]. Available from: <http://www.dnaindia.com/health/report-smokeless-tobacco-is-chewing-up-india-2270037>
9. Agache A, Botea S, Mustatea P, Bobirca F. Screening Criteria for Colorectal Cancer for Patients with Type II Diabetes Mellitus. *Med Mod - Mod Med*. 2020 Sep 26;27(3):195–207.
10. Sujatha D, Hebbar PB, Pai A. Prevalence and Correlation of Oral Lesions among Tobacco Smokers, Tobacco Chewers, Areca Nut and Alcohol Users. *Asian Pac J Cancer Prev*. 2012;13(4):1633–7.
11. Rana ZA, Khoso NA, Bajaj DR, Arshad O. Risk Factors for Precancerous Lesions of Oral Mucosa. :4.
12. Priyanka P, Viren P. Oral Mucosal Lesions among Residence of a Town in North Gujarat. *ResearchGate* [Internet]. [cited 2018 May 23]; Available from: https://www.researchgate.net/publication/267824666-Oral_Mucosal_Lesions_among_Residence_of_a_Town_in_North_Gujarat
13. Vinay. Prevalence of precancerous lesions and conditions in Telangana region, Andhra Pradesh, India [Internet]. [cited 2018 May 23]. Available from: <http://www.jiaphd.org/article.asp?issn=2319-5932;year=2014;volume=12;issue=1;spage=23;epage=27;aulast=Vinay>
14. Comparing dose-response measurements of oral habits on oral leukoplakia and oral submucous fibrosis from a community screening program. - PubMed - NCBI [Internet]. [cited 2018 May 24]. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/20149061>
15. Community based oral precancerous lesions/conditions : an analysis of associated factors [Internet]. [cited 2018 May 24]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3465053/>