

# Assessment of the oral health seeking behavior of patients with premalignant lesions

Shravani G. Deolia<sup>1</sup>, Mrunmayee V. Khare<sup>1</sup>, Ritika P. Arora<sup>1</sup>,  
Rana N. Chikhale<sup>1</sup>, Revti D. Korde<sup>1</sup>, Amit M. Reche<sup>1</sup>

<sup>1</sup>Department of Public Health Dentistry, Sharad Pawar Dental College and Hospital, DMIMS, Wardha, Maharashtra, India

## ABSTRACT

**Background:** Before choosing/visiting any dental facility for their treatment, patients consider several factors. These factors may be related to the patient or service provider. The health-seeking behavior of a society defines how health services are used. **Aims:** To assess the health seeking behavior of patients with premalignant lesions. **Material and Method:** A cross sectional study using questionnaire was done among the patients who consulted in the Department of Oral Medicine and Radiology, of age 18 and above suffering from precancerous lesions. The questionnaire included 25 close-ended questions which collected information about the demographic details, oral hygiene habits, oral health issues, deleterious habits. The responses were either on dichotomous scale (yes and no) or on the frequency habits. A total of 218 subjects were included in the study. The data were analyzed using the Chi-square test. The acceptable level of significance was reduced to  $P < 0.05$ . **Result:** Slightly over 50% of study participants visited the dentist for their dental problems. Most of the participants visited dental clinic whenever needed. Maximum positive health seeking behavior is seen in fourth and fifth decade and minimum seen in second and third decade. **Conclusion:** The oral premalignant lesions have high chances of transformation into malignancies. The progression of these lesions can be prevented by stopping the progression at an early stage and thus instilling positive health seeking behavior serves as an important key to it.

**Keywords:** Health-seeking behavior, premalignant lesions, primary prevention, quality of life

## Introduction

Premalignant lesions of oral mucosa involve a group of diseases, which should be identified in the early stage. The most common oral mucosal diseases are Oral leukoplakia, Oral sub mucous fibrosis (OSMF), and Oral erythroplakia.<sup>[1,2]</sup> These lesions have high chances of transforming into malignancies.<sup>[2]</sup> In the study done by Pookhan *et al.* there were 70 patients who were diagnosed with premalignant lesions showed leukoplakia to be the most common premalignant lesion followed by lichen planus and OSMF.<sup>[2,3]</sup>

**Address for correspondence:** Mrunmayee V. Khare,  
Department of Public Health Dentistry, Sharad Pawar  
Dental College and Hospital, DMIMS, Wardha - 442 004,  
Maharashtra, India.  
E-mail: mrunz1@yahoo.co.in

**Received:** 08-08-2019

**Revised:** 04-11-2019

**Accepted:** 20-11-2019

**Published:** 28-01-2020

Diagnosing these lesions in early stage is lifesaving as in later stages they may progress to life threatening conditions like severe Dysplasia and Carcinoma *in situ*.<sup>[2]</sup> In the world, India is one of the largest producer and consumer of tobacco.<sup>[4-6]</sup> Use of tobacco, alcohol consumption, betel nut chewing are most frequently reported etiological factors.<sup>[7,8]</sup> Tobacco consumption causes variety of diseases which lead to disability or even death of the individual; hence, prevention is important which can be achieved by complete stoppage of habit. Primary prevention reduces the prevalence of premalignant diseases and act as a preventable cause.

Oral premalignant lesions and their pathological sequelae deteriorates the quality of life of the patients; as the management of the disorder is not affordable by the general population. If

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Deolia SG, Khare MV, Arora RP, Chikhale RN, Korde RD, Reche AM. Assessment of the oral health seeking behavior of patients with premalignant lesions. J Family Med Prim Care 2020;9:141-6.

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmpc.com

**DOI:**  
10.4103/jfmpc.jfmpc\_636\_19

the condition is treated with primary prevention the progression of the premalignant lesion into malignancy can be reduced. Inspecting the occurrence of oral mucosal lesions will avoid their malignant transformation.<sup>[9,10]</sup> Most of the population is unaware about the risk of oral premalignant lesions and guidelines to avert it.<sup>[9]</sup> The most common choice of treatment for malignant lesions is surgical excision which leads to heavy impairment of the quality of life of the patient and has a great impact on their psychology.<sup>[11]</sup> Thus to avoid these prior prevention of the condition in premalignant state can increase the quality of life. If in case the lesion is not controlled by primary prevention then early detection and proper intervention are the key factors in managing the spread of oral precancerous lesions.

Health-seeking behavior is any activity undertaken by individuals who perceive themselves as having health issues for the purpose of defining their stage of health until discovering and undertaking an appropriate remedy.<sup>[12]</sup> Patient's attitude in making decisions regarding their oral health is now changing from passive recipients to recipients who play an active role in taking measures to control their health and taking self-care initiatives.<sup>[13]</sup> Good oral hygiene is an important part of general wellbeing of an individual in the society and also contributes to a healthy life of human being. Before choosing/visiting any dental facility for their treatment, patients consider several factors. These factors may be related to the patient or service provider.<sup>[14]</sup> The health-seeking behavior of a society defines how health services are used.

Patient's health-seeking behavior can very well account for increased severity of precancerous lesions and also the transformation of these into oral cancers. The availability and accessibility of health services and diseases can affect the health-seeking behavior of the patient.<sup>[15]</sup> Dental health-seeking behavior has for a long time and for the majority been perceived as an emergency measure. Treatment has mainly been sought for pain and as we know pain is a symptom which comes in the terminal stages of oral disease progression. The usually prohibitive costs of dental treatment could be a factor in failure to seek treatment until it is too late. Availability of limited personnel and facilities for Dental health care is also a factor.<sup>[15]</sup> The early detection and prevention is an important key in stopping the progression of the disease and improving the quality of life of the patient. Caregivers have huge impact on mental health of the patient, which plays an important role in determining patient's health-seeking behavior.<sup>[16,17]</sup>

In our region, convincing the patients for treatment is a big challenge because mostly the patients are uneducated, unaware, and superstitious and belong to low socioeconomic status. The lack of studies on patient's health-seeking behavior in our region has directed the attention of the study authors to analyze the patient's health seeking behavior. By understanding patient's health-seeking behavior, their attitude towards the oral health can be judged which would help to reduce the amount of damage caused by the lesion and prevent its further progression. Efforts

need to be made by the caregivers as well as the patients to reduce the use of tobacco, betel nut, and other causative factors.

## Material and Methodology

Ethical approval was given by Ethical Committee of Institute. This study was conducted in Private Dental college of Central India. The approval from the ethical committee was taken on 16th October 2018. The purpose of the study was explained and written consent was taken from each individual who are ready to participate in the study. A cross sectional study was done among the patients who consulted in the Department Of Oral Medicine and Radiology, of age 18 and above suffering from precancerous lesions. The patients who had precancerous lesions were included in the study. All the patients who were not showing signs of precancerous lesions and those whose lesions progressed into malignancies were excluded from the study. The patients previously diagnosed with precancerous lesions were given the questionnaire.

Prior to the main survey a pilot study was conducted on 25 patients. The participants of the pilot study were not the part of main survey. A total of 218 subjects were included in the main study. Before beginning with the questionnaire the study objectives were explained to the participants. The questionnaire was validated by the pilot study. The time given to each patient was 6–8 minutes. The questionnaire which was given to these patients included 25 close-ended questions. The questions were in regional language.

The questionnaire collected information about the demographic details, oral hygiene habits, oral health issues, deleterious habits. The patients were enquired about the factor that they consider important while selecting dental facilities. Any queries arising during filling of the questions were explained by the investigator. The data collected were analyzed based on the two scales. The questions answered in yes and no were analyzed on dichotomous scale and the remaining questions were analyzed on the frequency of performing oral hygiene practices, frequency of dental visits, frequency of deleterious habits, and their opinion regarding importance of oral hygiene. The data were entered in MS Excel (MS Office version 2010 developed by Microsoft, Redmond, WA) and SPSS version 21 was used to perform statistical analysis using the Chi-square test. The acceptable level of significance was reduced to  $P < 0.05$ .

## Results

Table 1 presents demographic data of study participants. Among 218 study participants majority of the participants were males (90.36%). The study participants were divided into four categories based on their age.

Table 2 shows majority of males and females show the habit of cleaning their teeth once daily. Toothbrush (52.30%) was reported to be the most common cleaning aid used with

toothpaste/powder. 83.5% study participants have habit of consuming smokeless tobacco whereas 42.20%, 69.3% have habit of consuming smoke form of tobacco and betel nut respectively. Reduced mouth opening (55.00%) was the most common dental problem among the participants preceding red and white patch (28.40%).

Table 3 shows slightly over 50% of study participants visited the dentist for their dental problems. Most of the participants visited

**Table 1: Descriptive statistics on demographic characteristics.**

Variable		n	Percentage
Gender	Male	197	90.36%
	Female	21	9.63%
Age	18-35 years	96	44.03%
	36-55 years	77	35.32%
	>55 years	45	20.65%

dental clinic whenever needed. About 75.70% had previously undergone treatment out of them majority (44.00%) sought treatment at government hospital whereas 30.70% preferred private dental clinic and very few study participants (0.90%) preferred medical stores. The reason for opting specific dental care center was less expenditure in maximum cases. Accessibility, as reported by the study participants, also plays a role in choosing the oral health care facilities. Among those participants, who had not sought care (24.30%) despite experiencing dental problems, (8.30%) opted that care need not be sought for dental problems as they are not very important. Maximum individuals consider their oral hygiene condition to be average (60.60%), 31.70% consider it to be below average.

Table 4 presents patient's health-seeking behavior. Positive health-seeking behavior was seen in 68.92% males and 85.72% in females. Positive health-seeking behavior was observed in 153 participants (70.18%). Maximum positive health-seeking behavior

**Table 2: Differences in participant's responses on oral hygiene and habits**

Questions	Response	n %	Male n (%)	Female n (%)	Chi-square value	P
Brushing frequency	Once	187 (85.80%)	170 (86.3%)	17 (81.0%)	0.444	0.505
	Twice	31 (14.20%)	27 (13.7%)	4 (19.0%)		
	Thrice	0 (0%)	0 (0%)	0 (0%)		
	Other	0 (0%)	0 (0%)	0 (0%)		
Oral hygiene material	Toothpaste/Powder with brush	114 (52.30%)	106 (53.8%)	8 (38.1%)	12.29	0.002
	Toothpaste/powder with finger	101 (46.30%)	90 (45.7%)	11 (52.4%)		
	Snuff	3 (1.40%)	1 (0.5%)	2 (9.5%)		
	Other	0 (0%)	0 (0%)	0 (0%)		
Method of brushing	Horizontal	139 (63.80%)	125 (63.5%)	14 (66.7%)	0.844	0.656
	Vertical	23 (10.60%)	22 (11.2%)	1 (4.8%)		
	Circular	56 (25.70%)	50 (25.4%)	6 (28.6%)		
	Other	0	0	0		
Frequency of changing toothbrush	3 months	24 (11.0%)	23 (11.7%)	1 (4.8%)	2.382	0.497
	6 months	45 (20.60%)	42 (21.3%)	3 (14.3%)		
	1 year	46 (21.10%)	42 (21.3%)	4 (19.0%)		
	not applicable	103 (47.20%)	90 (45.7%)	13 (61.9%)		
Are you aware of any interdental aids	Yes	12 (5.50%)	12 (6.1%)	0 (0.0%)	1.354	0.245
	No	206 (94.50%)	185 (93.9%)	21 (100.0%)		
Which inter-dental aid?	Toothpick	12 (5.50%)	12 (6.1%)	0 (0.0%)	1.354	0.245
	interdental brush	0 (0%)	0 (0%)	0 (0%)		
	floss	0 (0%)	0 (0%)	0 (0%)		
	Other	0 (0%)	0 (0%)	0 (0%)		
Any deleterious habit?	Yes	218 (100.00%)	197 (100.0%)	21 (100.0%)	-	-
	No	0	0	0	-	-
Which of these do you consume?	smokeless tobacco	182 (83.50%)	165 (83.8%)	17 (81.0%)	0.108	0.742
	smoke tobacco	92 (42.20%)	83 (42.1%)	9 (42.9%)		
	Betel nut	151 (69.3%)	138 (70.1%)	13 (61.9%)		
	Others	1 (0.50%)	0 (0.0%)	1 (4.8%)		
Frequency of consumption	1-2 times	6 (2.80%)	5 (2.5%)	1 (4.8%)	3.499	0.321
	2-3 times	50 (22.90%)	46 (23.4%)	4 (19.0%)		
	3-4 times	124 (56.90%)	109 (55.3%)	15 (71.4%)		
	more than 5 times	38 (17.40%)	37 (18.8%)	1 (4.8%)		
Duration	less than 5 times	24 (11.00%)	22 (11.2%)	2 (9.5%)	7.214	0.065
	5-10 years	80 (36.70%)	71 (36.0%)	9 (42.9%)		
	11-15 years	86 (39.4%)	82 (41.6%)	4 (19.0%)		
	more than 20 years	28 (12.80%)	22 (11.2%)	6 (28.6%)		

**Table 3: Differences in participants' responses on health seeking behaviour**

Questions	Response	n (%)	Male n (%)	Female n (%)	Chi-square value	P
Have you ever visited dentist for your dental problems?	yes	121 (55.5%)	110 (55.8%)	11 (52.4%)	0.092	0.762
	no	97 (44.50%)	87 (44.2%)	10 (47.6%)		
Frequency of visiting dental clinic in a year	once	21 (9.60%)	20 (10.2%)	1 (4.8%)	10.753	0.029
	twice	7 (3.20%)	7 (3.6%)	0 (0.0%)		
	when needed	92 (42.20%)	83 (42.1%)	9 (42.9%)		
	never	1 (0.50%)	0 (0.0%)	1 (4.8%)		
Have you ever received any dental treatment?	yes	165 (75.70%)	149 (75.6%)	16 (76.2%)	0.003	0.955
	no	53 (24.30%)	48 (24.4%)	5 (23.8%)		
Where have you undergone treatment?	Government hospital	96 (44.00%)	85 (43.1%)	11 (52.4%)	5.146	0.161
	Private dental clinic	67 (30.70%)	63 (32.0%)	4 (19.0%)		
	Medical store	2 (0.90%)	1 (0.5%)	1 (4.8%)		
	Others	0 (0%)	0 (0%)	0 (0%)		
Reasons for preferring particular center	Others advice	50 (22.9%)	47 (23.9%)	3 (14.3%)	2.703	0.609
	Accessibility	41 (18.80%)	37 (18.8%)	4 (19.0%)		
	Less expenditure	55 (25.20%)	47 (23.9%)	8 (38.1%)		
	quality treatment	19 (8.70%)	18 (9.1%)	1 (4.8%)		
Reported barrier for not undergoing treatment	Fear	6 (2.80%)	5 (2.5%)	1 (4.8%)	0.638	0.959
	Expensive	15 (6.90%)	14 (7.1%)	1 (4.8%)		
	Lack of knowledge	14 (6.40%)	13 (6.6%)	1 (4.8%)		
	Did not give important	18 (8.30%)	16 8.1%	2 9.5%		
Opinion on your state of oral cavity?	more than average	6 (2.80%)	6 (3.0%)	0 (0.0%)	2.158	0.54
	average	132 (60.60%)	118 (59.9%)	14 (66.7%)		
	below average	69 (31.70%)	64 (32.5%)	5 (23.8%)		
	no opinion	11 (5.00%)	9 (4.6%)	2 (9.5%)		
Is there a need to improve your oral health?	yes	218 (100.00%)	197 (100.0%)	21 (100.0%)	-	-
	No	0 (0%)	0 (0%)	0 (0%)		

**Table 4: Positive and negative health seeking behaviour**

Sample characteristics	Health-seeking behavior				Chi-square value	Df	P	
	Negative		Positive					
	n	Percentage	n	Percentage				
Age in years	18-36 years	33	34.37%	63	65.62%	506.477	486	0.252
	37-54 years	17	22.07%	60	77.92%			
	55-72 years	14	33.33%	28	66.66%			
	73 years and above	1	33.33%	2	66.66%			
Gender	Male	60	31.08%	133	68.92%	6.504	9	0.689
	Female	5	14.28%	20	85.72%			
Total		65	28.99%	153	70.18%			

is seen in fourth and fifth decade and minimum seen in second and third decade.

## Discussion

The importance of oral health in the maintenance of general health has been long acknowledged by the WHO. Since then, there have been a lot of efforts towards raising awareness on oral health among the public by various local, national, and international bodies/organizations. Despite these efforts, oral health continues to be neglected by some people. Our study focuses on evaluation of patient's health seeking behavior with premalignant lesions.

In the current study, predilection for premalignant lesions were found more in males (90.36%) due to the habit of tobacco

consumption, tobacco being the major etiologic factor. Tobacco is known to contain more than 60 carcinogens. These chemicals accelerate the inflammatory process when they come in contact with oral mucosa and its long term use may lead to pathologic changes in oral mucosa.<sup>[9,18]</sup> Similar findings were observed in study done by Kumar S *et al* in Indian population, wherein more number of males were diagnosed with premalignant lesions.<sup>[9]</sup>

Our results showed that around 60% participants visit the dentist for their dental problems when needed. Furthermore, it was reported by the participants that accessibility was one of the main reasons why they had chosen the facility at which they had sought care. A comparable finding was seen in the study done by Musoke D *et al* where accessibility was a major factor for choosing a specific health care center.<sup>[15]</sup> Whereas, in

the study done by Bomireddy *et al.* in the rural population of Andhra Pradesh nearly, 45% of those participants who had not sought care despite experiencing dental problems opined that care need not be sought for dental problems as they are not very important. Lack of awareness continues to be one of the major barriers greatly influencing the care seeking behaviors in a negative manner.<sup>[18]</sup>

Majority of the participants seek treatment from government hospital. As receiving treatment at private dental clinics is far more expensive than the treatment costs at government hospitals and private dental colleges. The percentage of study participants who reported seeking oral health care was 44% which was comparable to the studies done by Saddki N *et al.* but was found to be lower in their studies.<sup>[18]</sup> However, these findings have to be comprehended in light of the fact that a private teaching dental institution is located within the geographical realms of the study area which may have improved the care-seeking behavior. Emphasis should also be placed on improving the social and environmental conditions of the people besides aiming to improve their cognitive levels.<sup>[18]</sup> Researches have shown higher survival rates in patients who were diagnosed at initial stages.<sup>[19]</sup>

The participants in our study claimed their oral hygiene status to be average whereas the study done by Saddki N *et al.* majority of the study participants claimed their oral hygiene status to be good.<sup>[18]</sup> Our study showed a good health-seeking behavior which varied from the study done by Bomireddy *et al.* which showed poor health seeking behavior.<sup>[20]</sup>

Our study has various limitations. The diagnosis of premalignant lesions was not confirmed by taking biopsy. Information on systemic diseases that could influence oral health care-seeking behaviors would have been a valuable addition to the present study. Underreported frequency of tobacco chewing and alcohol consumption to the interviewer due to social expectations can be other possible limitation in the study.<sup>[21,22]</sup> We included participants above 18 years in our study so we were unable to evaluate the health-seeking behavior of adolescent. The findings of this study must be comprehended in view of the existence of a teaching dental institution in the study area, hence may not be generalizable to the larger population so further research is warranted.

## Conclusion

The oral premalignant lesions have high chances of transformation into malignancies. The progression of these lesions can be prevented by advising the individuals to reduce the exposure of the risk factors. As primary intervention is the key to effective prevention, appropriate steps should be taken to prevent it. Early screening and diagnosis of these premalignant lesions can prove to be lifesaving. The oral health-seeking behavior in majority of the population was good. The remaining population was still unaware of the facilities and didn't give much importance

their oral health. Hence there still is need for awareness among the population. People should be told about the importance of primary prevention. Positive health-seeking behavior is evident in majority of the population.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Chaudhary M, Chandak T, Gawande M, Holani A, Gadbaile A. Candidal carriage in oral submucous fibrosis patients- A case control study. *J Datta Meghe Inst Med Sci Univ* 2012;7:5-9.
2. Yardimci G, Kutlubay Z, Engin B, Tuzun Y. Precancerous lesions of oral mucosa. *World J Clin Cases* 2014;2:866-72.
3. Phookan J, Saikia KP. A clinicopathological study of the premalignant conditions of oral cavity. *Indian J Otolaryngol Head Neck Surg* 1998;50:246-9.
4. Basakhetre U, Jaiswal A, Deolia S, Sen S, Dawngliani M, Jaiswal A. Prevalence of tobacco use among school children reporting to dental hospital for treatment. *J Datta Meghe Inst Med Sci Univ* 2017;12:242-5.
5. Kadashetti V, Shivakumar K, Chaudhary M, Patil S, Gawande M, Hande A. Influence of risk factors on patients suffering from potentially malignant disorders and oral cancer: A case-control study. *J Oral Maxillofac Pathol* 2017;21:455-6.
6. Deolia S, Agarwal S, Chhabra KG, Daphle G, Sen S, Jaiswal A. Physical and psychological dependence of smokeless and smoked tobacco. *JCDR* 2018;12:ZC01-4.
7. Kadashetti V, Chaudhary M, Patil S, Gawande M, Shivakumar KM, Patil S, *et al.* Analysis of various risk factors affecting potentially malignant disorders and oral cancer patients of central India. *J Can Res Ther* 2015;11:280-6.
8. Hande AH, Chaudhary MS. Cytomorphometric analysis of buccal mucosa of tobacco chewers. *Rom J Morphol Embryol* 2010;51:527-32.
9. Kumar S, Debnath N, Ismail MB, Kumar A, Kumar A, Badiyani BK, *et al.* Prevalence and risk factors for oral potentially malignant disorders in Indian population. *Adv Prev Med* 2015;2015:208519.
10. Eesha T, Minal C, Madhuri G, Vijay W, Amol G. Variation in the changes induced by different forms of tobacco in dental hard tissues-A SEM-EDAX study. *J Oral Biosci* 2012;53:348-55.
11. Awadallah M, Idle M, Patel K, Kademani D. Management

- update of potentially premalignant oral epithelial lesions. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2018;125:628-36.
12. Azhar N, Doss JG. Health-seeking behaviour and delayed presentation of oral cancer patients in a developing country: A qualitative study based on the self-regulatory model. *Asian Pac J Cancer Prev* 2018;19:2935-41.
  13. Dawood OT, Hassali MA, Saleem F, Ibrahim IR, Abdulameer AH, Jasim HH. Assessment of health seeking behaviour and self-medication among general public in state of Penang, Malaysia. *Pharm Pract* 2017;15:991.
  14. AlZarea BK. Dental and oral problem patterns and treatment seeking behavior of geriatric population. *Open dent J* 2017;11:230-6.
  15. Musoke D, Boynton P, Butler C, Musoke MB. Health seeking behaviour and challenges in utilising health facilities in Wakiso district, Uganda. *J Afr Health Sci* 2014;14:1046-55.
  16. Behere P, Sinha S. Correlation of global mental health assessment tool (GMHAT- PC) in assessment of psychiatric patients as compared to the psychiatrist's diagnosis in a primary care of central India-preliminary findings. *J Datta Meghe Inst Med Sci Univ* 2014;9:1-4.
  17. Grover S, Avasthi A, Shah S, Lakdawala B, Chakraborty K, Nebhinani N, *et al.* Indian psychiatric society multicentric study on assessment of health-care needs of patients with severe mental illnesses. *Indian J Psychiatry* 2015;57:43-50.
  18. Saddki N, Yusoff A, Hwang YL. Factors associated with dental visit and barriers to utilization of oral health care in a sample of an natal mother in hospital university Sains Malaysia. *BMC Public Health* 2010;10:75.
  19. Epstein JB, Gorsky M, Cabay RJ, Day T, Gonsalves W. Screening for and diagnosis of oral premalignant lesions and oropharyngeal squamous cell carcinoma-role of primary care physician, clinical review. *Can Fam Physician* 2008;54:870-5.
  20. Bommireddy VS, Pachava S, Viswanath V, Talluri D, Ravoori S, Sanikommu S. Oral health care seeking behaviors and influencing factors among south Indian rural adults: A cross sectional study. *J Indian Assoc Public Health Dent* 2017;15:252-7.
  21. Zain RB, Ikeda N, Gupta PC, Warnakulasuriya S, van Wyk CW, Shrestha P, *et al.* Oral mucosal lesions associated with betel quid, areca nut and tobacco chewing habits: Consensus from a workshop held in Kuala Lumpur, Malaysia. *J Oral Pathol Med* 1996;28:1-4.
  22. Hecht SS. Tobacco carcinogens, their biomarkers and tobacco-induced cancer. *Nat Rev Cancer* 2003;3:733-44.