



International Journal of Applied Dental Sciences

ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2021; 7(1): 84-88
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www.oraljournal.com
Received: 07-10-2020
Accepted: 13-11-2020

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A cross-sectional prevalence study: To assess the prevalence and site distribution of oral mucosal lesions

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DOI: <https://doi.org/10.22271/oral.2021.v7.i1b.1120>

Abstract

Introduction: Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease 'CANCER', hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur.

Methods: A cross-sectional prevalence study was carried out to assess the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. The sample size was estimated to be 150. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The data was collected using the WHO oral health assessment form 2013. The data analysis was done using the SPSS version 20.

Result: The results stated a strong association between age, chewing tobacco smoking and oral lesions.

Conclusion: The present study concludes a positive relation between intake of tobacco in any form with oral mucosal lesions hence an additional effort to educate the masses about the hazardous effects of tobacco should be a priority for both governmental and non-governmental agencies.

Keywords: Oral mucosal lesions, tobacco, oral cancer, early diagnosis

Introduction

The health of the oral mucosa is directly related to the general health of the human beings. The oral mucosa performs various different functions like protection, sensation and secretion [1]. The health of the oral cavity also plays an important in the quality of the life of all individuals [2]. The oral mucous membrane effectively serves as a protective barrier against trauma, pathogens, as well as cancer causing agents [3]. Oral mucosal lesions are usually known as any abnormal modification in the color, surface aspects, swelling, or loss of solidarity of the oral mucosal surface. Even though a bigger proportion of OMLs are usually benign and do not require any emergency or active treatment, but there might be cases present demonstrating significant pathology, among these with particular importance are oral potentially malignant disorders which have a greater chance to progress into a malignancy [4]. Disruption of the oral health negatively affects a number of important physiologic processes such as speech, chewing and swallowing and it also deteriorates social contacts [5]. Oral mucosal lesions are now commonly seen in many populations around the world. The epidemiological studies of oral mucosal lesions are still fewer when compared with studies regarding dental caries or periodontal diseases [6]. In India, the consumption of tobacco is responsible for more than half of all the oral mucosal lesions in men and more than one-fourth of oral mucosal lesions in women. The World Health Organization predicts that deaths due to consumption of tobacco in India may exceed 1.5 million annually by 2020. The incidence of oral mucosal lesions of the oral cavity is maximizing because of the increase in intake of smokeless as well as smoking of tobacco [7]. The use of tobacco in India differs from that of the globe. The most widely used form of tobacco globally in the world is in the form of a cigarette, however, in India, merely 20% of the tobacco consumed is in the form of a cigarette, whereas 40% is consumed as bidi, and the rest in the form of smokeless/chewable tobacco.

The use of tobacco in India is influenced by various different factors such as persons attitude, the exposed stress, extensive workload, easy availability, widespread advertising of tobacco brands with different products and a dearth of awareness spreading campaigns [7]. There might be many other reasons other than tobacco which may cause oral mucosal lesions such as bacterial, viral or fungal infections, traumatic injuries, systemic diseases and even excessive consumption of betel nut and alcohol [2].

Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease 'Cancer', hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The aim of this study was to attain a strategically standard approach based on the guidelines presented by the World Health Organization for the collection and report of data about the oral mucosal lesions.

Materials and Method

A cross-sectional prevalence study was carried out to assess the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur. The patients attending outpatient department of Shivam Dental Clinic, Lakhimpur from 15th of September 2019 to 22nd of February 2020 were included in the study. Patients who were more than 10 years of age and patients who were less than 60 years of age were included in the study. The sample size was calculated using the formula: $N = Z^2 P (1-P)/D^2$ and was estimated to be 150 based on the empirical sample size obtained from previous literature. Verbal consent was taken from the patients visiting the outdoor patient department of Shivam Dental Clinic, Lakhimpur. Inclusion Criteria (1). Patients attending outdoor patient department of Shivam Dental Clinic, Lakhimpur. (2) Patients of both genders were included. (3) Patients with age more than 10 years and less than 60 years were included. Exclusion Criteria (1) Patients who were not willing to participate in the study. (2) Patients with systematic disorders. (3) Patients who were less than 10 years and more than 60 years of age. A single examiner previously trained for the diagnosis of Oral Mucosal lesions made all examinations. The examiner was calibrated priorly to ensure uniform interpretation of the data and reliability. Duplicate examinations were conducted for the 5% of the sample at the beginning, about half way through the survey, and again at the end of the survey to ensure the reliability of the examiner. The data was collected using the WHO oral health assessment form 2013. The oral health surveys provide a concrete basis for assessing the present oral health status of a given population and simultaneously helps to determine the basic needs for oral health care for oral mucosal diseases. The guidelines presented in the WHO oral health assessment form 2013 have been elaborated for practical and economical sample designs suitable for recording the prevalence of oral

diseases required for strategic planning and establishment of oral health programmes World Health Organization's Guide to epidemiology and Diagnosis of Oral Mucosal diseases was used as the diagnostic criteria. All patients were examined while seated on a dental chair using artificial light. Two mouth mirrors were used to retract the tongue and the cheeks. Cotton swabs were used during the examination for removing debris and examining whether white lesions could be wiped off or not. The statistical test Pearson's Chi-Square was used to test the significance of the prevalence of the oral mucosal lesions in association with age, gender, and tobacco intake habits. The data analysis was done using the SPSS version 20.

Result

The present study aimed to attain a strategically standard approach based on the guidelines presented by the World Health Organization for the collection and report of data about the oral mucosal lesions.

A total of 150 study participants were included in the study. Chi square test was applied for independent association of variables.

There was no association between age & location of lesion
 P value 0.441

$0.441 > 0.05 =$ non-significant

There was no association between gender & smoking
 P value 0.125

$0.125 > 0.05$ non significance

There was an association between age & smoking

P value 0.037

$0.037 < 0.05$ significant

There was an association between age & chewing tobacco

P value 0.000

$0.00 < 0.05$ significant

There was an association between lesion & gender

P value 0.014

$0.014 < 0.05$ significant

There was an association between age & lesion

P value 0.000

$0.00 < 0.05$ significant

There was an association between age n chewing tobacco

P value 0.000

$0.000 < 0.05$ significant

Table 1: Frequency Percent Valid percent

		Frequency	Percent	Valid percent
Valid	20-30	61	40.7	40.7
	31-40	47	31.3	31.3
	41-50	32	21.3	21.3
	51-60	10	6.7	6.7
	Total	150	100.0	100.0

Table 2: Location * age groups cross tabulation count

		Age groups			Total
		31-40	41-50	51-60	
Location	BM	11 35.4%	14 45.6%	5 16.12%	30 96.7%
	Tongue	1 3.22%	0	0	1 3.22
Total		12 38.7%	14 45.16%	5 3.33%	31 100%

Table 3: Chi-square tests

	Value	df	Asymp. sig. (2-sided)
Pearson Chi-Square	1.636 ^a	2	.441
Likelihood Ratio	1.951	2	.377
Linear-by-Linear Association	1.205	1	.272
N of Valid Cases	31		

P value 0.441, 0.441>0.05 = non-significant, There is no association between age & location of lesion

Table 4: Smoking * gender crosstabulation count

		Gender		Total
		Male	Female	
Smoking	Non smokers	32 21.33%	11 7.33%	43 28.66%
	smokers	91 60.66%	16 10.66%	107 71.33%
Total		123	27	150

Table 5: Chi-square tests

	Value	df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-Square	2.347 ^a	1	.125		
Continuity Correction ^b	1.683	1	.195		
Likelihood Ratio	2.230	1	.135		
Fisher's Exact Test				.158	.099
Linear-by-Linear Association	2.332	1	.127		
N of Valid Cases	150				

0.125 p value, 0.125>0.05 no significance, No association between gender & smoking

Table 6: Crosstab count

		Age groups				Total
		20-30	31-40	41-50	51-60	
Smoking	Non smokers	22 14.66%	16 10.66%	3 2%	2 1.3%	43 28.66%
	Smokers	39 6%	31 20.6%	29 19.33%	8 5.33%	107 71.33%
Total		61 40.66%	47 31.3%	32 21.3%	10.66%	150 100%

Table 7: Chi-square tests

	Value	df	Asymp. sig. (2-sided)
Pearson Chi-Square	8.489 ^a	3	.037
Likelihood Ratio	9.775	3	.021
Linear-by-Linear Association	5.657	1	.017
N of Valid Cases	150		

0.037<0.05 significant, Association between age & smoking

Table 8: Crosstab count

		Chewing tobacco		Total
		Non chewers	Chewers	
Age groups	20-30	29 19.33%	32 21.33%	61 40.66%
	31-40	5 3.33%	42 28%	47 31.33%
	41-50	8 5.33%	24 16%	32 21.33%
	51-60	5 3.33%	5 3.33%	10 6.66%
Total		47 31.3%	103 68.66%	150 100%

Table 9: Chi-square tests

	Value	df	Asymp. sig. (2-sided)
Pearson Chi-Square	19.019 ^a	3	.000
Likelihood Ratio	20.399	3	.000
Linear-by-Linear Association	2.332	1	.127
N of Valid Cases	150		

P value 0.000, 0.00<0.05, Association between age & chewing tobacco

Table 10: Crosstab count

		Chewing tobacco		Total
		Non chewers	Chewers	
Gender	Male	36 24%	87 58%	123 82%
	Female	11 7.3%	16 10.6%	27 18%
Total		47 31.3%	103 68.66%	150 100%

Table 11: Count

		Gender		Total
		Male	Female	
Lesion	Present	92 61.33%	26 17.33%	118 78.66%
	Absent	31 20.66%	1 0.66%	32 21.33%
Total		123 82%	27 18%	150 100%

Table 12: Chi-square tests

	Value	df	Asymp. sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi Square	6.098 ^a	1	.014		
Continuity Correction ^b	4.884	1	.027		
Likelihood Ratio	8.067	1	.005		
Fisher's Exact Test				.010	.008
Linear-by-Linear Association	6.057	1	.014		
N of Valid Cases	150				

P value 0.014, 0.014<0.05 significant, Association between lesion & gender

Table 13: Crosstab count

		Age groups				Total
		21-30	31-40	41-50	51-60	
Lesion	Present	61 40.66%	34 22.66%	18 12%	5 3.33%	118 78.6%
	Absent	0	13 8.6%	14 9.3%	5 3.33%	32 21.33%
Total		61 40.66%	47 31.3%	32 21.33%	10 6.6%	150 100%

Table 14: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.142 ^a	3	.000
Likelihood Ratio	42.346	3	.000
Linear-by-Linear Association	30.021	1	.000
N of Valid Cases	150		

P value 0.000, 0.00<0.05 significant, Association between age & lesion

Table 15: Age groups * *Chewing tobacco* crosstabulation count

		Chewing tobacco		Total
		Chewers	Non chewers	
Age groups	20-30	29 19.33%	32 21.3%	61 40.66%
	31-40	5 3.33%	42 28%	47 31.33%
	41-50	8 5.3%	24 16%	32 21.3%
	51-60	5 3.33%	5 3.33%	10 6.66%
Total		47 31.33%	103 68.66%	150 100%

Table 16: Chi-square tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.019 ^a	3	.000
Likelihood Ratio	20.399	3	.000
Linear-by-Linear Association	2.332	1	.127
N of Valid Cases	150		

P value 0.000, 0.000<0.05 significant, Association between age n chewing tobacco Mnb

Table 17: Chewing tobacco

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non chewers	47	31.3	31.3	31.3
	chewers	103	68.7	68.7	100.0
	Total	150	100.0	100.0	

Table 18: Smoking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non smokers	43	28.7	28.7	28.7
	smokers	107	71.3	71.3	100.0
	Total	150	100.0	100.0	

Table 19: Lesion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	118	78.7	78.7	78.7
	Present	32	21.3	21.3	100.0
	Total	150	100.0	100.0	

Table 20: Carcinoma

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	149	99.3	99.3	99.3
	Present	1	.7	.7	100.0
	Total	150	100.0	100.0	

Table 21: Leukoplakia

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Absent	141	94.0	94.0	94.0
	Present	9	6.0	6.0	100.0
	Total	150	100.0	100.0	

Table 21: Erythroplakia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	absent	150	100.0	100.0	100.0

Table 22: Lichen planus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	137	91.3	91.3	91.3
	Present	13	8.7	8.7	100.0
	Total	150	100.0	100.0	

Table 23: OSMF

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	142	94.7	94.7	94.7
	Present	8	5.3	5.3	100.0
	Total	150	100.0	100.0	

Table 24: Candidiasis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Absent	149	99.3	99.3	99.3
	Present	1	.7	.7	100.0
	Total	150	100.0	100.0	

Table 25: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	123	82.0	82.0	82.0
	Female	27	18.0	18.0	100.0
	Total	150	100.0	100.0	

Discussion

Early diagnosis is the key in the prevention of transformation of oral mucosal lesions into life threatening disease ‘CANCER’, hence the need of the study determines the prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient department of Shivam Dental Clinic, Lakhimpur.

78% of the study participants had an oral mucosal lesion which was contrasting according to a study by Andrej Aleksander Kansky *et al*, Shakir Mahmood Al-Gburi *et al*. and Sendhil Kumar *et al*. [2, 5, 6].

In the current study the age group most affected by oral mucosal lesions was 21-30 years (41%) where as in a study conducted by Kamla A *et al*. [3] and Kaveri Hallikeri *et al*. it was more than 40 years [7].

The most common oral mucosal lesion in the present study was oral lichen planus (8.7%) while it was hairy tongue (17.4%), cheek biting and fordyces granules in studies conducted by Sami El Toum *et al*. [4], Aleksander Kansky *et al*. [5] and Daud Mirza *et al*. [11].

The most common affected site by the oral mucosal lesions was the buccal mucosa (40.5%) followed by dorsum of the tongue (27%) in a study conducted by Maher Alshayeb *et al*. [8] which was also in accordance with the current study where the most common site for oral mucosal lesions was buccal mucosal followed by the tongue.

There was no significant difference in the incidence of oral lesions between the genders in the present study and was comparable with a study conducted by Meral ÜNÜR *et al*. and Cury, Patricia Ramos *et al*. [9, 10].

In the current study minimum number of oral mucosal lesions were found in the age group above 50 years of age while the least affected age group was 10-20 years in a study conducted by Daud Mirza *et al*. [11].

In the current study the female participants were 18% which was more than in a study conducted by M Krishna Priya *et al*. [12] and less than studies conducted by K. M. Shivakumar *et al*. [13] and Ali-Rıza-İlker Cebeci *et al*. [14].

The total number of study participants in the present study were 150 where as in studies conducted by José Nicolau Gheno *et al*. [15], Arvind Babu *et al*. [16] and Prashant N. Keche *et al*. [17]. were 801, 3500 and 255 respectively.

Conclusion

Oral mucosal lesions have a potential tendency to transform in oral mucosal malignancies which ultimately result in death. The present study concludes a positive relation between intake of tobacco in any form with oral mucosal lesions hence an additional effort to educate the masses about the hazardous effects of tobacco should be a priority for both governmental and non-governmental agencies.

Conflicts of Interest: None

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