

Prevalence of Oral Mucosal Lesions among the Patients Attending the Outpatient Department of Faculty of Dental Sciences, Banaras Hindu University, Varanasi

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Abstract

Objective: This study was conducted to evaluate the prevalence of oral mucosal lesions among the patients who visited the outpatient department of Faculty of Dental Sciences, Banaras Hindu University, Varanasi. *Material and Methods:* A total number of 3293 subjects were clinically examined for oral mucosal lesions over a period of 5 months from November 2015 to March 2016 in which 3251 were selected for the study after screening. *Results:* The result showed the presence of oral mucosal lesions in 31.25% of the study subjects and leukoplakia (29.72%) was the most frequently seen lesion. In our study tobacco-related lesions leukoplakia, smoker's palate, oral submucous fibrosis etc. were more prevalent in males where as in the females oral lichen planus, traumatic ulcer, recurrent aphthous ulcers were more commonly seen.

Keywords: Oral Mucosal Lesions; Soft Tissue Lesions; Oral Cavity Tumors.

Introduction

Mucous membrane or mucosa is a membrane that lines various cavities in the body and surrounds internal organs. It consists of one or more layers of epithelial cells overlying a layer of loose connective tissue. Inside the oral cavity, oral mucosa lines all soft tissue structures [1]. The function of oral mucosa is to protect deeper tissues and organs from the external environment of the oral cavity like toxic effects of toxins which are released by micro-organisms present in the oral cavity, mechanical forces (biting, chewing etc) and surface abrasives [2]. Factors that can cause changes to the oral mucosa include [2] changes of the immune system of the body, physical

and thermal causes, systemic diseases, infections such as bacterial, fungal, viral and other agents, recurrent trauma, others such as habit of using tobacco and alcohol can cause precancerous and cancerous lesions in the oral cavity. Long term use of dentures may also cause changes in the oral mucosa. These lesions can be found at any site in the oral cavity. Different sites in oral cavity show predilection for different types of lesions [2]. The prevalence of oral mucosal lesions is important to evaluate the oral health of any population [3,4]. When planning measures for improving oral health the lack of data may lead to a risk of overlooking diseases of the soft tissue in and adjacent to oral cavity [5]. Hence the study was conducted to evaluate the presence of oral mucosal lesions in the patients visiting the Department of Oral Medicine and Radiology, Faculty of Dental Sciences, I.M.S, BHU, Varanasi. So the data can be generated and used for planning in preventive measures for local population in Varanasi and nearby areas.

Materials and Methods

The patients attending the outpatient department of Oral Medicine, Faculty of Dental Sciences IMS BHU were included in this study. After taking the written informed consent, diagnosis of oral lesions was confirmed using the World Health

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Organization's Guide to Epidemiology and Diagnosis of Oral and Mucosal disease [6]. Patients fulfilling the inclusive criteria were included in the study and patients with limited mouth opening in which the intraoral examination was not possible were excluded from the study. The catch up areas of Faculty of Dental Sciences BHU are - The districts of eastern Uttar Pradesh, Madhya Pradesh, Jharkhand, Bihar and Chhattisgarh (Figure 1).



Fig. 1:

The duration of the study was from November 2015 to March 2016. The patients were divided into seven age groups: 1-10 yrs, 11 -20 yrs, 21-30 yrs, 31-40 yrs, 41-50 yrs, 51-60yrs and >60 yrs. All the patients were examined by a single examiner with the help of an assistant on the dental chair under good artificial light using diagnostic instruments (mouth mirror, probe, twizer). Cotton swab was used to the clean the debris. All the subjects were examined clinically and asked for the history of any personal habits like pan-gutkha chewing, smoking etc. History was obtained from the parents or relatives for the patients who were not able to communicate either because of age or disease. In this study no laboratory test or biopsy was performed, both the extraoral and intraoral examination was based on visual inspection and palpation. Patient were examined, diagnosed and later referred to respective department for their treatment of various oral ailments. In the present study RR (relative risk) with 95% CI (confidence interval) in other groups with a minimal exposure group to the lesion was evaluated.

Statistical Method

The Relative risk (RR) and 95% CI count under following formula -

$$RR = \frac{\text{Disease rate among the exposers}}{\text{Disease rate among the non exposures}}$$

Exposure	Yes	No
Yes	a	c
No	b	D

$$RR = \frac{a/a + c}{b/b + d}$$

$$95\%CI \quad LL = \frac{RR}{EF} \quad , \quad UL = RR \times EF$$

Where $EF = E^{1.96} \left(\frac{1}{a} + \frac{1}{c} \right)$

Results

The total 3293 subjects were examined out of which 42(1.28%) patients were excluded from the study because of limited mouth opening. 3251 cases were included for this study. The study subjects had the mean age of 34.2yrs. The patients were divided into seven groups based on age: 1-10 yrs, 11 -20 yrs, 21-30 yrs, 31-40 yrs, 41-50 yrs, 51-60yrs and >60 yrs old (Table 1). In 3251 study subjects 7.78% (253) were in the age group of 1-10yrs, 6.83% (222) were in the age group of 11-20yrs, 30.33% (986) were in the age group of 21-30, 25.07% (815) were in the age group of 31-40yrs, 13.66% (444) were in the age group of 41-50, 9.41% (306) were in the age group of 51-60, 6.92% (225) were in the age group of >60 yrs. Out of 3251, 54.54% were male and 45.46% were female (Table 2). Mean age of male was 34.3 yrs, and female was 34.1 yrs. Out of 3251, 1016(31.25%) patients presented with the oral lesions. There mean age was 40.7 yrs. In 2235(68.75%) subjects no mucosal abnormalities were found. The mean age of these subjects was 31.3yrs. The out of 1016 lesions affected 628 (34.72%) males and 388(26.15%) females. Relative risk (1.35) between male and female was statistically significant (Table 2, Chart 4). In our study (n=3251), 2052(63.12%) subjects were from rural areas and 1199(36.88%) were from urban areas. Among the patient into had oral lesions (n=1016), (789) 77.66% were belonged to rural areas and (227)22.34% to urban areas. Relative risk (2.03) between rural and urban population was statistically significant (Table 3).

Leukoplakia was the most frequently observed lesion(29.77%) followed by oral submucous fibrosis (26.77%), oral lichen planus (18.80%), traumatic ulcers (10.53%), recurrent aphthae, (4.92%), pyogenic granuloma (1.87%), angular chelitis (1.67%), fissured tongue (1.28%), smokers melanosis (1.28%), denture stomatitis (1.18%), Irritonal fibroma (1.08%) and herpes ulcer (0.89%)(Table 4). In patients suffering

from oral mucosal lesions, 3.61% (8) were in the age group of 1-10yrs, 6.76% (15) were in the age group of 11-20yrs, 28.70% (283) were in the age group of 21-30, 30.92% (252) were in the age group of 31-40yrs, 43.24% (192) were in the age group of 41-50, 47.71% (146) were in the age group of 51-60, 53.33% (120) were in the age group of >60 yrs. Relative risk of age group 21-30yrs, 31-40yrs, 41-50yrs, 51-60yrs and >60yrs was statistically significant. This shows that highly positively association between presences of lesion and age (Table 5). Among the sites involved by oral mucosal lesions buccal mucosa (50%) was most commonly affected followed by labial mucosa (20%), vestibular mucosa (17%), tongue (8%), palatal mucosa (2%), lingual mucosa (1%), floor of the mouth (1%), vermilion border (1%) (Table 6). We

also categorized the patients according to their occupation, lesions were more prevalent in Manual worker (57.09) and Retried/others person (58.87%) as compared with students (7.73%), professional (10.09%) and housewives (44.36%). Relative risk of oral mucosal lesions in the manual workers (7.38), housewives (5.74) and retired/others (7.61) was statistically significant (Table 7). 460 (25.74%) (n=1016) patients had oral lesions without any personal habits, 238 (46.12%) were tobacco smokers and chewers, 216 (32.82%) only had tobacco chewing habit and 102 (30.72%) patients were smokers only. Relative risk of the tobacco smokers and chewers (1.86) and tobacco chewers (1.31) was statistically significant. Smokers also had high confidence interval (0.987-1.429) but it was statistically insignificant (Table 8).

Table 1: Age and Gender distribution of study subjects

Age In Years	Male		Female		Total	
	NUMBER	%	NUMBER	%	NUMBER	%
1 to 10	150	8.46	103	7	253	8
11to20	99	5.58	123	8	222	7
21to30	512	29	474	32	986	30
31to40	485	27	330	22	815	25
41to50	243	14	201	14	444	14
51to60	166	9	140	9	306	9
>60	118	7	107	7	225	7
Total	1773	100	1478	100	3251	100

Table 2: Association of the gender with the lesions

Gender	Lesions		Total n=3251	RR	95%CI
	Absent (%)	Present (%)			
Male	1145 (64.58)	628 (35.42)	1773	1.35	1.212-1.504
Female	1090 (73.75)	388 (26.25)	1478		

Table 3: Association of Region with the lesions

Region	Lesions		Total (n=3251)	RR	95% CI
	Absent (%)	Present (%)			
Urban	972 (81.07)	227 (18.93)	1199 (36.65)	2.03	1.784-2.319
Rural	1263 (61.55)	789 (38.45)	2052 (63.35)		

Table 4: Type of Lesions present in the study

Type of the lesions	Number n=1016	%
1-Leukoplakia	302	29.72
2-Oral sub mucous fibrosis	272	26.77
3-Oral lichen planus	191	18.80
4-Traumatic ulcer	107	10.53
5-Reccurent Aphthae	50	4.92
6-Smokers melanosis	13	1.28
7-Angular Chelitis	17	1.67
8-Herpes Ulcer	9	0.89
9-Fissured Tongue	13	1.28
10-Irritational FIB	11	1.08
11-Pyogenic granuloma	19	1.87
12-Denture stomatitis	12	1.18

Table 5: Association of age with the lesions

Age (in years)	Lesions		Total (n=3251)	RR	95% CI
	Absent (n=2235) (%)	Present (n=1016) (%)			
1-10	245 (96.84)	8 (3.16)	253 (7.78)	1.00	Ref.
11-20	207 (93.24)	15 (6.76)	222 (6.83)	2.14	0.870-5.427
21-30	703 (71.30)	283 (28.70)	986 (30.33)	9.08	4.478-19.596
31-40	563 (69.08)	252 (30.92)	815 (25.07)	9.78	4.824-21.129
41-50	252 (56.76)	192 (43.24)	444 (13.66)	13.68	6.772-29.576
51-60	160 (52.29)	146 (47.71)	306 (9.41)	15.09	7.486-32.694
>60	105 (46.67)	120 (53.33)	225 (6.92)	16.87	8.408-36.549

Table 6: Site distributions of the lesions

Site of the lesions	Number of case n=1016	%
Labial mucosa	204	20
Buccal mucosa	509	50
vestibular mucosa	168	17
Palatal mucosa	25	2
Lingual mucosa	15	1
Floor of the mouth	8	1
Tongue	81	8
Vermilion border	9	1

Table 7: Association of occupation with the lesions

Occupation	Lesions		Total (n=3251)	RR	95% CI
	Absent (%)	Present (%)			
Professionals	606 (89.91)	68 (10.09)	674	1.3	0.936-1.818
Manual Workers	330 (42.91)	439 (57.09)	769	7.38	5.869-9.354
Student	835 (92.27)	70 (7.73)	905	1.00	Ref.
House wife	355 (55.64)	283 (44.36)	638	5.74	4.507-7.350
Retired/ others	109 (41.13)	156 (58.87)	265	7.61	5.987-9.683

Table 8: Association of habit with present of lesions

Habits	Lesions		Total (n=3251)	RR	95% CI
	Absent (%)	Present (%)			
Smoking only	230 (69.28)	102 (30.72)	332	1.19	0.987-1.429
Chewing only	420 (66.04)	216 (33.96)	636	1.31	1.148-1.510
Smoking +Chewing	258 (52.02)	238 (47.98)	496	1.86	1.645-2.101
No habit	1327 (74.26)	460 (25.74)	1787	1.00	Ref .

Discussion

This study was undertaken to report the prevalence of oral mucosal lesions in patients attending out patients Department of Faculty of Dental Sciences, I.M.S. BHU. The study was undertaken for a certain time limit so the present data should not be regarded as representative of the area population. The study only provides the information about the common oral lesions in this area that may be encountered in the dental clinic. As it is a hospital based study with a mixed population and a small sample size data obtained should be interpreted with caution. This study showed the prevalence of oral mucosal lesions in the patients was 31.25% (1016). The findings of this study was similar to the other studies, earlier conducted by Lin HC et al who found the prevalence of oral mucosal lesion (66.2%) 7 and Mathew AL et al (41.2%) [5], but it was in contrast to studies of Zain RB et al (9.7%) [8] and Ikeda N et al (4.9%) [9]. These dissimilarities could be because of different diagnostic criteria and different socio-cultural customs and backgrounds.

In present study prevalence of the lesion was more in the population who belong to rural areas as compared to the urban population which was similar to the study conducted by Patil et al [10]. This may be because of lack of education and knowledge about the oral health in rural scenario. Lesions were more prevalent in males than in females this can be due to different personal habits in different gender. This was similar to other studies which were earlier conducted by Patil et al, Kumar shiva et al, Mathew AL et al Marija KK et al [1,10,5,11].

The prevalence of disease was more in the manual workers as compared with the people from other occupation. This was similar to earlier study of Kumar Shiva et al [1]. This may be due to the fact that manual workers belong from lower socio-economic status and they are less aware about the oral health and also they may be not so careful regarding the oral hygiene. In our study it was observed that as the age was increased the prevalence of lesion also increased. It was similar to the earlier conducted study by Mathew AL et al [5]. This could be due to the change in the immune response of the body. In this study leukoplakia was the most frequently seen lesions which is similar to other earlier conducted studies, by Ikeda in Japan (25%) [12], but higher when compared with the studies by Mathew AL et al (1.59%) [5]. The tobacco- associated lesions were more prevalent in males, where as in the females non-tobacco associated lesions were more commonly seen. This was similar to study of Kovac-Kovacic M et al

and Mani NJ et al [13,14]. The data collected in this study was based on the clinical finding which shows the importance of clinical sign and symptoms. It is necessary for all the dental professionals to be aware of the clinical findings of these lesions for their early diagnosis and management. While collecting the data we noticed that many of the patients were not aware about the condition and they were asymptomatic also. This shows the importance of the careful clinical examination of oral cavity. Limitations of this study could be geographical variations of the patients as our study showed the prevalence of the lesions only in the patients who are visiting to our department and all the hospital based study shows a higher prevalence rate. This study highlighted two important findings firstly patient having chewing and smoking habits had high risk of developing the oral mucosal lesions as compared with non smokers and non chewers (RR-1.86). This could be due to commutative effect of chewing tobacco and smoking on oral mucosa. Secondly the risk of the oral mucosal lesions was increased as the age increased when compared with minimal exposure group.

Conclusion

This study demonstrates that the combined effect of chewing and smoking and increasing age is associated with greater risk of oral mucosal lesions. An emphasis should be given to a proper of oral check up, so that the lesions can be detected early and promptly treated.

Dental professionals should be advising and reinforcing patients to quit the habit of tobacco.

References

1. Shivakumar GC, Sahana S, Saha S. Prevalence and site distribution of Oral Mucosal Lesions in patients attending outpatient clinics of Oxford Dental College, Bangalore. *J Indian Assoc Public Health Dent.* 2010; 15:69-73.
2. Reichart PA. Oral mucosal lesions in representative cross-sectional study of aging Germans. *Community Dentistry and Oral Epidemiology* 2000; 28:390-398
3. Axell T. A prevalence study of oral mucosal lesions in an adult Swedish population. *Thesis Odontol Revy* 1976; 27:1-103.
4. Bouquot JE. Common oral lesions found during a mass screening examination. *J Am Dent Assoc* 1986; 112:50-7.
5. Mathew AL, Pai KM, Sholapurkar AA, Vengal M.

- The prevalence of oral mucosal lesions in patients visiting a dental school in Southern India. *Indian J Dent Res.* 2008; 19:99-103. [PubMed: 18445924].
6. 4th ed. Geneva: World Health Organization; 1997. *Oral Health Surveys, basic methods*
 7. Lin HC, Corbet EF, Lo EC. Oral mucosal lesions in adult Chinese. *J Dent Res.* 2001; 80:1486-90. [PubMed: 11437225] .
 8. Zain RB, Ikeda N, Razak IA, Axéll T, Majid ZA, Gupta PC, et al. A national epidemiological survey of oral mucosal lesions in Malaysia. *Community Dent Epidemiol.* 1997; 25:377-83.
 9. Ikeda N, Handa Y, Khim SR, Durward C, Axell T, Miztmo T, et al. Prevalence study of oral mucosal lesions in a selected Cambodian population. *Community Dent Oral Epidemiol.* 1995; 23:49-54. © Munksgaard, 1995. [PubMed: 7774177].
 10. Patil PB, Bathi R, Chaudhari S. Prevalence of oral mucosal lesions in dental patients with tobacco smoking, chewing, and mixed habits: A cross-sectional study in South India. *Journal of Family & Community Medicine.* 2013; 20(2):130-135. doi:10.4103/2230-8229.114777.
 11. Marija KK, Uros S. The prevalence of oral mucosal lesions in a population in Ljubljana, Slovenia. *Journal of Oral Pathology and Medicine* 2000; 29:331-335.
 12. Ikeda B, Ishii T, Iida S, Kawai T. Epidemiological study of oral leukoplakia based on mass screening for oral mucosal diseases in a selected Japanese population. *Community Dent Oral Epidemiol* 1991; 19:160-3.
 13. Kovac-Kovacic M, Skaleric U. The prevalence of oral mucosal lesions in a population in Ljubljana, Slovenia. *J Oral Pathol Med* 2000; 29:331-5.
 14. Mani NJ. Preliminary report on prevalence of oral cancer and precancerous lesions among dental patients in Saudi Arabia. *Commun Dent Oral Epidemiol* 1985; 13:247 8.
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