

Prevalence of Oral Submucous Fibrosis in Patients Visiting Dental College in Darbhanga: A Demographic Study

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ABSTRACT

Background: Oral submucous fibrosis (OSMF) has one of the highest rates of malignant transformation among potentially malignant oral lesions and conditions, therefore, a cause of concern for oral healthcare professionals. This research aims to evaluate the prevalence of OSMF among betel nut chewers in different age groups in patients visiting the Sarjug Dental College, Darbhanga, India.

Materials and Methods: A total of 1720 patients of OSMF visiting Sarjug Dental College, Darbhanga over a period of 24 months (October 2017 to 2019) were included in the study. A detailed case history was taken and clinical examination was carried. The diagnosis of OSMF was made depending up on the symptoms like difficulty in opening the mouth and associated blanched oral mucosa, with palpable fibrous bands. Other diagnostic features included burning sensation, salivation, tongue protrusion, habits, and associated malignant changes. Study was done on the basis of age group, habit duration, frequency of habit, and type of habit. Simple correlation analysis was performed.

Results: Of the 1720 cases of OSMF studied, According to mouth opening, OSMF shows prevalence in stage II 804 (46.74%), followed by stage III 596 (34.66%), stage I 180 (10.47%), and stage IV 140 (8.14%). Based upon age group, group III (30--40 years) showed more prevalence than the others.

Conclusion: The high prevalence of OSMF requires significant awareness and management of these lesions among general population. So, dentists should be knowledgeable and familiar with the etiopathogenesis, clinical presentation, diagnosis, and management of the lesion.

Keywords: Oral submucous fibrosis, mouth opening, erythroplakia, leukoplakia.

INTRODUCTION

Shushrutha described a condition, "vidari" under mouth and throat diseases in his times. He noted narrowing of mouth opening, depigmentation of oral mucosa, and pain on taking food. These features precisely fit in with the symptomatology of oral submucous fibrosis.^[1] Schwartz (1952) for the first time reported a case of "atrophica idiopathica tropica mucosae oris" occurring in Indians in East Africa. Lal and Joshi (1953) first described this condition in India. Joshi coined the term "oral

submucous fibrosis (OSMF)."^[2] Pindborg and Sirsat (1966) described histologically, the four consecutive stages of the OSMF.^[3] Seedat and Van Wyk (1988) have reported about irreversible nature of the disease, that is, once OSMF induced by the habit of chewing betel nut, the reversal of the disease after cessation of the habit could not occur.^[4] Primary healthcare physician can play a very vital role in early diagnosis of OSMF considering its progressive nature. It is a restrictive

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condition of oral cavity with multifactorial etiology with areca nut chewing most common one. Prevalence of this deleterious habit in India is on rise so this disease which once used to be rare has become very common, hence the awareness of the clinical features, diagnosis, and management is the main stay to curb this menace. Hence, the role of primary healthcare physician and dentist, being the first point of contact for general population, becomes paramount. Therefore, a study was conducted to evaluate the prevalence of OSMF among betel nut chewers in different age groups among known population.

MATERIALS AND METHODS

A cross-sectional study was conducted in the Outpatient Department of the Sarjug Dental College, Darbhanga for 24 months. Approval from the Ethical Committee of the Institute was obtained. Informed consent was taken from all the participants of the study. OSMF patients were divided according to gender. A total of 1720 OSMF patients were screened out. Oral examinations were done by specialist examiners who were familiar with oral mucosal lesions in the local population. The selected patients were divided into four groups according to their clinica stage:

Stage I: Interincisal mouth opening up to or greater than 35 mm, stomatitis, and blanching of oral mucosa.

Stage II: Interincisal mouth opening between 25 and 35 mm, presence of palpable fibrous band in buccal mucosa and/or oroparynx, with/without stomatitis.

Stage III: Interincisal mouth opening between 15 and 25 mm; presence of palpable fibrous bands in buccal mucosa and/or or pharynx, and in any other parts of the oral cavity.

Stage IV: Interincisal mouth opening less than 15 mm.

A. Any other stage along with other potentially malignant disorders, for example, oral leukoplakia, oral erythroplakia, etc.

B. Any other stage along with oral carcinoma.

The OSMF patients were divided in four categories on the basis of age groups:

- Group I: 10–20 years
- Group II: 20–30 years
- Group III: 30–40 years
- Group IV: 40–50 years.

Prevalence of OSMF was also recorded on the basis of habit duration and divided in three groups:

- Group A: 2–5 years
- Group B: 5–10 years
- Group C: More than 10 years.

Patients suffering from any systemic diseases and children below the age of 10 years were excluded from this study. Data was analyzed using IBM SPSS Statistics version 21 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). Descriptive statistics included calculation of means and standard deviation. Data distribution was assessed for normality using Shapiro--Wilk test. Chi-square test was used for comparing the categorical data. All values were considered statistically significant for a value of $P < 0.05$.

RESULTS

There were 63,140 subjects in total being screened up, 1720 subjects were found to be suffering from OSMF. [Figure 1] shows out of 1720 subjects, 1680 were males (97.33%) and 40 were females (2.33%). According to mouth opening, OSMF was divided in four stages. [Table 1] shows more prevalence in stage II 804 (46.74%), followed by stage III 596 (34.66%), stage I 180 (10.47%), and stage IV 140 (8.14%).

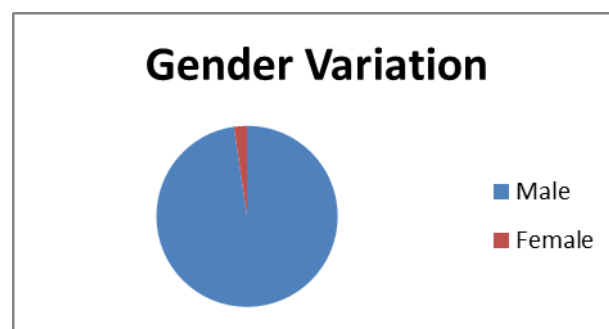


Fig 1: Gender Variation.

Table 1: Prevalence of OSMF on the basis of clinical staging.

Stage	Number	Percentage	Mean	Standard Deviation
I	180	10.47	430	323.54
II	804	46.74		
III	596	34.66		
IV	140	8.14		
Total	1720			

[Table 2] shows the prevalence on the basis of age groups, more prevalence of OSMF was found in group III (34.42%), followed by group II (30.70%), group IV (27.91%), group I (4.65%), and group V (2.33%).

Age Group (Years)	Total	Percentage	Stage	Number	Percentage	Mean+- SD
10-20 Group I	80	4.65	I	20	25	20 +- 0.284
			II	60	75	
			III	00	-	
			IV	00	-	
20-30 Group II	528	30.70	I	160	30.30	132+- 15.58
			II	180	34.09	
			III	188	35.61	
			IV	00	-	
30-40 Group III	592	34.42	I	00	-	148+- 22.50
			II	324	54.73	
			III	268	45.27	
			IV	00	-	
40-50 Group IV	480	27.91	I	00	-	120+- 10.46
			II	240	50	
			III	140	29.17	
			IV	100	20.83	
50-60 Group V	40	2.32	I	00	-	10+- 0.22
			II	00	-	
			III	00	-	
			IV	40	100	
P < 0.05	1720					

Table 2: Prevalence of OSMF on the basis of age group.

In Group I, more prevalence was found in stage II (75%) OSMF than stage I (25%). In Group II, approximately equal prevalence was found in stage II (34.09%) and stage III (35.61%). Less prevalence was recorded in stage I (30.30%) under group II. In Group III, more prevalence was found in stage II (54.73%) OSMF than stage III (45.27%) OSMF. No prevalence was found in stage I and stage IV. In Group IV, more prevalence was found in stage II (50%) OSMF followed by than stage III (29.17%) and stage IV (20.83%) OSMF. Finally, in group V, all 20 patients were found in stage IV. ($P < 0.001$).

[Table 3] shows the prevalence of OSMF on the basis of duration of habit. Group A consisted of people with a habit duration of 2-5 years. Group B consisted of people with a habit duration of 5-10 years, and Group C consisted of people with habit duration of more than 10 years. High prevalence was found in Group C (48.84%) in comparison to Group B (47.67%) and Group A (3.49%). This prevalence was statically significant ($P < 0.001$).

Table 3: Prevalence of OSMF on the basis of duration of habits.

Duration of Habit (Years)	Total	Percentage	Stage	Number	Percentage	Mean+- SD
2-5 Group A	60	3.49	I	60	100	15 +- 0.24
			II	00	-	
			III	00	-	
			IV	00	-	
5-10 Group B	820	47.67	I	120	14.63	205+- 27.12
			II	312	38.05	
			III	348	42.44	
			IV	40	4.88	
More than 10 Group C	840	48.84	I	00	-	210+- 30.04
			II	492	58.57	
			III	248	29.52	
			IV	100	11.90	
P < 0.05	1720					

DISCUSSION

There is compelling evidence to implicate the habitual chewing of areca nut with the development of OSMF. It occurs predominantly in the Indian subcontinent where the habit is more prevalent.[1] The alkaloid present in areca nut, Arecoline, is converted to arecadaine, which stimulates fibroblastic activity in oral mucosa resulting in excessive collagen deposition seen in OSMF.[5-8]

Yang assessed the prevalence, gender distribution, age, income, and urbanization status of OSMF patients in Taiwan. Patients were diagnosed with OSMF during the period between January 1, 1996 and December 31, 2013. It showed that the prevalence of OSMF increased significantly from 8.3 (per 10 (5)) in 1996 to 16.2 (per 10 (5)) in 2013 ($P < 0.0001$). Men had a significantly higher OSMF prevalence than women.[9] Sinor et al. in India found male predominance in OSMF cases.[10] In present study, male predominance can be due to easy accessibility for males to use areca nut and its products more frequently than females. Male patients were more in comparison to females, with

a prevalence of OSMF 97.67% compared with 2.33% in females.

Mehrotra conducted a study to evaluate the prevalence rates of oral mucosal lesions in this hospital from 1990 to 2001 in Allahabad, North India. Data was collected year wise with reference to age, sex, site involved, and histopathological findings. It showed that potentially malignant and malignant oral lesions were widespread in the patients visiting the hospital in this region.[11] Similarly, in a population-based case control study in rural and urban Lucknow, it was found that patients who use pan masala were at higher risk of developing OSMF.[12]

In this study, the 1720 patients were in the age range of 15–60 years, with a peak incidence in 30–40 years (34.88%), followed by 20–30 years (30.23%). Hence, it can be concluded that the occurrence of OSMF is seen most commonly in age group 30–40 years followed by 20–30 years. The youngest patient was 16-year-old, and the eldest was 60-year-old. The observation of present study was similar to study conducted by Nigam, who reported the maximum number of OSMF cases were in the age group of 36–40 years.[13] This could be because of increased social encounters and economic liberty they get at this age in a rapidly developing nation like India. Therefore, during this age, they indulge in various chewing habits such as betel nut, guthka, pan masala, smoking, alcohol, etc., either to relieve stress, as a fashion or due to peer pressure.

In present study, clinical staging of all 1720 OSMF patients was assessed. It was found that maximum patients were seen in stage II (46.42%) and stage III (34.52%), followed by stage I (10.73%) and stage IV (8.33%). Kumar found in his study of 1,006 OSMF patients, 422 (41.94%) cases were stage II. Two hundred and twenty six (22.29%) were stage IV, 184 (18.29%) stage III, and 174 (17.29%) stage I which is somewhat different to present study.[14] This could be on the grounds that in the early cases significant changes particularly, limited mouth opening are not seen, and unless there is a significant affection of the functions patient's body, patients won't approach the doctor, and furthermore an absence of information about the illness can likewise ascribe to this.

CONCLUSION

The high prevalence of OSMF requires significant awareness and management of these lesions among general population. So, dentists should be knowledgeable and familiar with the etiopathogenesis, clinical presentation, diagnosis, and management of the lesion.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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