Prevalence of oral submucous fibrosis in South Kerala: A cross sectional study

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Abstract
Introduction: Oral submucous fibrosis is an oral precancerous condition found in the Asian subcontinent mostly India, Pakistan, Sri Lanka and Bangladesh. Usually found among habitual gutkha, arecanut and pan chewers.
Aim: 1. Assess the prevalence of OSMF among patients visiting a dental college in South Kerala. 2. To evaluate the association between the prevalence of OSMF with the age, gender, type, frequency and duration of the habit.
Materials and Methods: We examined all the patients who visited the Department of Oral Medicine over a period of 24 months. Detailed history and clinical examination was performed. Study design was based on clinical stage, age group, duration, frequency and the type of habit.
Results: Out of the total 26476 patients examined 9345 were males and 17131 were females respectively. A total of 19 subjects were diagnosed with OSMF (0.07%). Mean age of the patients with OSMF was 48.63±14.2 with a male predilection of 78.9% and 21.1% females. OSMF was found to be more common (52.6%) in the age group of 41-60 years. Mild OSMF was more prevalent (47.4%) compared to moderate (42.1%) and severe (10.5%). Pan masala was used more than gutkha and the combination of gutkha and tobacco. There was no statistically significant association between the stages, type, frequency and duration of the habit. ($p>0.005$).
Conclusion: Our study revealed a prevalence of 0.07% of OSMF among patients visiting a dental school in South Kerala. Public awareness programs linked with oral premalignant condition and habits may control disease process.

Keywords: Oral precancer, Arecanut, Panmasala.

Introduction
"Oral submucous fibrosis is an insidious chronic disease affecting any part of the oral cavity & sometimes the pharynx. Although occasionally preceded by &/or associated with vesicle formation, it is always associated with juxta-epithelial inflammatory reaction followed by a fibro-elastic change of the lamina propria with epithelial atrophy leading to stiffness of mucosa causing trismus & inability to eat".[1] Other names are "diffuse oral sub mucous fibrosis", "sclerosing stomatitis", "idiopathic scleroma of the mouth", "idiopathic palatal fibrosis", "juxta epithelial fibrosis", "gutkha or arecanut chewers syndrome" etc.[2,3]

Sushrutha (2500-3000BC), first mentioned a condition with narrowing of mouth, depigmentation of mucosa and pain on food intake and named it as "Vidari".[4] Schwartz (1952) described it among Indian females in Kenya, which was termed as Atroipica Idiopathica Mucosae Oris".[5] In 1953, SG Joshi coined the term "Oral submucous Fibrosis".[6]

Etiological factors were divided into initiators and promoters according to a review in 1989.[7] Chilies, areca nut, tobacco, and streptococcal infection were included as initiators. Epidemiological evidence strongly indicates the association of OSMF to betel quid habit.[8]

Our study aims to assess the prevalence of OSMF, and its association with the age, gender, type, duration and frequency of habits.

Materials and Methods
A cross sectional study was conducted among 26476 patients between the age group of 20-80 years, who visited the dental school in rural South Kerala, over a two-year period. Out of the total patients examined 9345 were males and 17131 were females. All the patients were examined for the presence of OSMF by a single trained specialist. Clinical features includes restriction of mouth opening, decreased salivation, dysgeusia, limited tongue protrusion. Patients with any systemic diseases, malignancy and those who consume alcohol were excluded from the study.

For patients, with OSMF duration, type and frequency of the chewing, xerostomia, burning sensation, and difficulty in mouth opening were recorded. Clinical examination includes the presence of blanching of the mucosa and palpable fibrotic bands. Inter-incisal distance was measured using vernier calipers. If the distance was < 30 mm it was considered as restricted mouth opening.

The severity of OSMF was assessed as per the clinical features by Mathur and Jha as given below.[9]
Stage 1: Mild – a. Mild blanching b. No restriction in mouth opening. c. No restriction in tongue protrusion, measuring from mesio-incisal angle of an upper central incisor to the tip of the tongue when maximally extended with mouth at maximal opening. d. Burning sensation only on ingesting spicy foods, hot liquids, etc.
Stage 2: Moderate OSMF- Moderate to severe blanching b. Mouth opening reduced by 33%, tongue protrusion reduced by 33%, and flexibility also demonstrably decreased. c. Burning sensation even in absence of stimuli. d. Presence of palpable bands. e. Lymphadenopathy, either uni-or bilateral. f. Demonstrable anemia on hematological examination
Stage 3: Severe OSMF- Very severe burning sensation, patient unable to perform day-to-day work. b. More than 66% reduction in mouth opening, cheek flexibility and tongue protrusion. In many cases, the tongue may appear fixed. c.

Ulcerative lesions may appear in cheek. d. Thick palpable bands. e. Lymphadenopathy evident bilaterally.

Patients were also grouped according to their ages as 20-40, 41-60 and 61-80 years. The frequency and duration of using the abusive agent was also divided into 3 groups of ≥5, 6-10 and <10 times/day and ≥5, 6-10 and <10 years respectively.

For comparing the association of variables Fisher's exact test was used among the groups and $p < 0.05$ was statistically significant.

Results

In our study, it was observed that out of the total 26,476 patients examined 19 (0.07%) patients were diagnosed with OSMF (Table 1). Mean age of the patients with OSMF was 48.63±14.2 with a male predilection of 78.9% and 21.1% of females. OSMF was found to be more common (52.6%) in the age group of 41-60 years. Mild OSMF was more prevalent (47.4%) compared to moderate (42.1%) and severe (10.5%). Distribution of type of OSMF according to gender and age group are given in Table 2. Pan Masala (11, 57.9%) was used more than gutkha (5, 26.3%) and the combination of gutkha and tobacco (3, 15.8%), Distribution of type of habit according to the age group and gender are given in Table 3. The frequency and duration of using pan masala was highest among the patients who had OSMF. Distribution of type of habit according to duration and frequency of the habit are given in Table 4. Distribution of OSMF patients according to its stages and the type of habit are given in Fig. 1. There was no statistically significant association between the stages, type, frequency and duration of the habit. ($p>0.005$).

Table 1: Distribution of OSMF according to gender of the patients

Gender	Total Patients (OPD)	Total Patients with OSMF
Male	9345	15
Female	17131	4
Total	26476	19

Discussion

It was observed that the prevalence of OSMF was 0.07% which is low, as compared to the epidemiological studies by Pindborg et al[1] among urban Indians seeking in Bombay, Bangalore, Trivandrum and Manipal (0.5%, 0.2%, 1.2% and 2.1%) respectively.

Stage I was the most prevalent stage (47.4%) and is in accordance reports from habitual chewers of Moradabad.[7] This finding is not according to Raina et al[8] from India were Grade I OSMF was observed in 9%, Grade II 39% and 52% had Grade III.

41-60 age group had more OSMF as compared to other age groups and is not in accordance with the reports from Indian subcontinent that had maximum patients in the 21-30 and 21-40 age.[9-11] According to Kumar S,[12] 20-30 years had more OSMF in comparison to the other age groups. Nigam N.K. et al observed that OSMF was common in 36-40 age group followed by 21-25 age group.[7]

According to gender, OSMF was more prevalent in males. Pandya et al and other studies had the same observations.[13-15] A male predominance in OSMF cases was also reported by Kumar S[12] and Sinor et al.[11] Male predominance can be due to the easy accessibility for males to use arecanut and its products more frequently than females.

Habit noticed among our OSMF patients was pan masala as compared to arecanut alone. The findings of Babu S et al[16] among OSMF patients in Hydrabad and Nigam NK et al[7] observed that people were more addicted to Guthka as compared to raw arecanut, panmasala, and pan etc.

52.6% who used gutkha 5-10 times / day had more prevalence of OSMF. But findings of Kumar S showed only 47.6% with a frequency < 5 years had more prevalence of OSMF.[12] 47.4% of the patients had different habits for < 5 years.

OSMF was noticed among those who use gutkha >10 years. This can be attributed to the longer exposure of gutkha to the mucosa. This was contrary to the findings of Kumar S[12] were habitual chewers for 2-5 years presented with OSMF as compared to the other groups.

Table 2: Distribution of type of OSMF according to gender and age group

Type	Gender	Age group (years)			Total (%)	
		20-40	41-60	61-80		
Mild	Female	0	1	0	1	9 (47.4)
	Male	2	4	2	8	
Moderate	Female	0	2	1	3	8 (42.1)
	Male	1	3	1	5	
Severe	Female	0	0	0	0	2 (10.5)
	Male	2	0	0	2	
Total		5 (26.3%)	10 (52.6%)	4(21.1%)	19 19 (100)	

Table 3: Distribution of type of habit according to the age group and gender

Type	Gender	Age group			Total (%)	
		20-40	41-60	61-80		
Gutkha	Female	0	1	1	2	5 (26.3)
	Male	0	1	2	3	
Pan Masala	Female	0	2	0	2	11(57.9)
	Male	5	4	0	9	
Gutkha and tobacco	Female	0	0	0	0	3 (15.8)
	Male	0	2	1	3	
Total		5 (26.3)	10 (52.6)	4 (21.0)	19	19 (100)

Table 4: Distribution of type of habit according to duration and frequency of the habit

Type	Frequency (times/day)	Duration (in yrs)		
		≤ 5 years	6-10 years	> 10 years
Gutkha	≤5	0	0	3
	6-10	1	0	1
	>10	0	0	3
Pan Masala	≤5	3	2	1
	6-10	2	1	2
	>10	5	3	3
Tobacco +Gutkha	≤5	0	0	0
	6-10	1	0	0
	>10	2	0	0

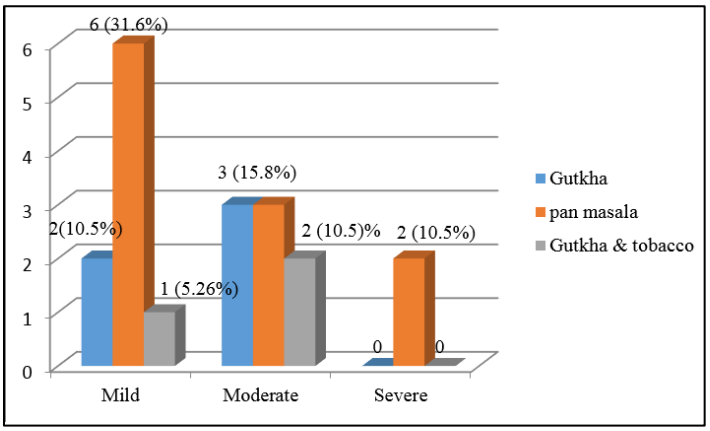

Fig. 1: Distribution of OSMF patients according to its stages and the type of habit

Conflict of Interest: None.

Conclusion

Oral submucous fibrosis has high malignant transformation potential as compared to other oral premalignant lesions. The main causative agents for OSMF are arecanut, mainly arecoline. Commercially available arecanut and tobacco (gutkha) products have shown higher severity in terms of clinical staging. It is an urgent need to educate the public about the adverse effects of the habit and government has to ban these products.

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