

Original Research

Incidence Rate of Oral Submucous Fibrosis (OSMF) and its etiology in Patients in Darbhanga Town

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ABSTRACT:

Objectives: To assess the incidence of OSMF and its etiology in patients attending OPD at Dental Department, Darbhanga Medical College and Hospital Laheriasarie, Darbhanga. **Material and Methods:** The diagnosis of OSMF was based on clinical examination and evaluation of patients signs and symptoms who reported to the Dental Department at the college hospital during the period of February 2017– January 2018. **Results:** The total number of patients affected by OSMF in this time duration was 1123. Out of these, 1087 (96.82%) were male, while 36 were female (3.18%). Therefore, male: female (M:F) ratio was 30:1. The age group most affected was 21-30 years consisting 40.80% and the most common etiology was gutkha chewing. **Conclusion:** This study reveals that the incidence rate of OSMF in patients visiting Dental Department, Darbhanga Medical College and Hospital Laheriasarie, Darbhanga was 4.1%. Males were more affected than females. It was seen that the major etiological factors in the development of OSMF was areca nut and gutkha chewing habit in patients.

Keywords: Gutkha, habit, oral submucous fibrosis.

Received: 30 April, 2018

Revised: 25 August, 2019

Accepted: 15 September, 2019

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This article may be cited as: Choudhary HV, Priyadarshni P, Kolley SK, Srivastava AK, Vatsa R. Incidence Rate of Oral Submucous Fibrosis (OSMF) and its etiology in Patients in Darbhanga Town. J Adv Med Dent Scie Res 2019;7(10): 68-72.

INTRODUCTION

Oral submucous fibrosis (OSMF) is a chronic, progressive, scarring precancerous condition of the oral cavity seen predominantly in the Indian subcontinent and South East Asia.^[1] In India, the prevalence increased over the past four decades from 0.03% to 6.42%.^[2,3] Data published earlier reported an estimate of 5 million OSMF patients in India.^[4] OSMF is seen commonly in males between 20 and 40 years age. The common sites involved are buccal mucosa, labial mucosa, retromolar pads, soft palate and floor of the mouth. Rarely fibrotic changes of the pharynx, esophagus and para-tubal muscles of eustachian tubes have

also been observed. Early features of OSMF include burning sensation, hypersalivation/ xerostomia and mucosal blanching with marble like appearance.^[5] Later on, the mucosa becomes leathery and inelastic with palpable fibrous bands resulting in restricted mouth opening, eventually leading to difficulty in swallowing, speech & hearing defects and defective gustatory sensation.^[5-6] The pathogenesis of OSMF is multifactorial. This includes areca nut chewing, excessive chilly consumption, vitamin B complex & iron deficiency, autoimmunity, genetic and environmental factors.^[5,7,8] However, the most consistent factor identified through epidemiological studies is areca

nut consumption inform of quid^[5,7,8]. Areca nut contains alkaloids like arecoline, arecaine, guvacine and guvacoline, flavanoids and copper. The alkaloids stimulate fibroblasts to produce collagen and flavanoids inhibit collagenase, thus decreasing collagen degradation.⁴ Reasons for using areca nut primarily are attaining euphoria, satiation, thus making the habit, addictive. Areca nut is consumed either alone or in combination with other constituents. Paan or betel quid contains areca nut and slaked lime wrapped in a betel leaf (Piper betel)⁹. Gutkha is a mixture of powdered areca nut and tobacco, marketed in pre-packaged pouches of 5-10 g^[4]. There is a sudden upsurge in the use of gutkha recently, due to easy availability, attractive colorful packs, longer shelf life and low cost. Though, paan and gutkha chewing are the most common abusive habits of northern India, very few studies were conducted among this population.^[10,11] The present study was hence conducted to assess the prevalence of OSMF and its etiology in Darbhanga town among patients attending OPD at Dental Department, Darbhanga Medical College And Hospital Laheriasarie, Darbhanga.

METHODOLOGY

The present Cross-sectional study was carried out in Dental Department at Darbhanga Medical College and Hospitals, Laheriasarie Darbhanga India. Ethical clearance was obtained. Sample size was the total number of patients reported to the Department of Dentistry at the college hospital during the period of February 2017– January 2018.

Sample size: 26,823 patients attended OPD at Dental Department, Darbhanga Medical College and Hospital Laheriasarie, Darbhanga and were examined for OSMF. Among them, 1123 patients displayed clinical features of OSMF.

Inclusion criteria: Clinical features- burning sensation of mouth on intake of hot beverages and spicy food, vesicle formation and ulceration, gradual reduction in mouth opening, limitation in tongue movement and palpable white fibrous bands (Table 1).

Then patients having OSMF were categorized into 5 age groups:

1st: 11-20 years
2nd: 21-30 years
3rd: 31-40 years
4th: 41-50 years
5th: >50 years

The armamentarium consisted of sterile mouth mirror, straight and curved explorers, kidney tray, disposable latex gloves, disposable mouth mask and a 6 inch ruler with mm markings. The questionnaire included the basic socio-demographic variables of all patients along with presence of habit of areca nut or gutkha chewing or betel quid chewing and symptoms like burning sensation in mouth on intake of hot and spicy food and altered salivation were recorded. Clinical examination showed blanching and stiffness of oral mucosa and soft palate, palpable and chiefly in buccal mucosa and sometimes vesicle formation and ulceration.

Table 1 Grading system for OSMF

Features	Grade 1 (Very early stage)	Grade 2 (Early stage)	Grade 3 (Moderately advanced stage)	Grade 4 (Advanced stage)
Symptoms	Burning sensation, dryness of mouth, vesicle formation or ulceration	Burning sensation, dryness of mouth	Burning sensation, dryness of mouth	Burning sensation, dryness of mouth
Spicy food	Irritation	Irritation	Irritation	Irritation
Mucosal Colour	No changes in mucosal colour	Mucosa is blanched and loses its elasticity	Blanched opaque leather-like mucosa	Blanched opaque leather-like mucosa
Fibrosis	No fibrosis, bands palpable	No clear-cut fibrotic bands	Vertical fibrotic bands on buccal mucosa making it stiff	Thick fibrotic bands occurring at both the buccal mucosa in retromolar area and at the pterygo-mandibular raphe
Mouth Opening	Mouth opening normal	Slight restriction of mouth opening	Considerable restriction of mouth opening	Very little mouth opening
Tongue	Tongue protrusion normal	Tongue protrusion Normal	Tongue protrusion not much affected	Restricted tongue protrusion
Eating and speaking	-	-	Difficulty in eating and speaking	Eating and speaking very much impaired
Eating and speaking	-	-	Poor oral hygiene	Very poor oral hygiene

RESULTS

Out of the total OPD of 26823 patients reported to the Dental Department at the college hospital during the period of February 2017–January 2018, the total number of OSMF patients were 1123 (4.1%).

The most affected age group was 21 – 30 years in males (40.80%) and in females 31-40 year age group (2%) Table 2. The males showed more incidence than female. The greatest proportion of OSMF patients (49.55%) had a

habit of chewing gutkha followed by areca nut chewing (42.14%) and then areca nut with betal quid (Table 3). This study found that most patients with OSMF were in stage II clinical condition (Table 4). Results depicted that almost 75% of the patients complained of burning sensation in the mouth while restricted mouth opening was seen in 69.7% of clinically diagnosed patients. On clinical examination, fibrous bands were palpable in 73.9% of the patients (Table 5).

Table 2 Distribution of subjects having OSMF according to their age and sex

Age(in years)	Males		Females		Total	
	No.	%	No.	%	No.	%
11-20	148	13.18	-	0	148	13.18
21-30	458	40.80	-	0	458	40.80
31-40	239	21.27	23	2	262	23.27
41-50	113	10.09	13	1.1	126	11.19
>50	129	11.48	-	0	129	11.48
	1087	96.82	36	3.1	1123	100

Table 3 Distribution of adverse oral habits in OSMF patients (multiple response)

Sr. No.	Habits	No. of patients (n=1123)	%
1.	Areca nut	473	42.14
2.	Gutkha chewing	557	49.55
3.	Betal quid + Areca nut	93	8.31

Table 4 Distribution of subjects affected by OSMF according to their clinical grades and mouth opening

Sr.No.	Mouth opening (in mm)	No. of patients (n=1123)	%
Stage I	>40	207	18.49
Stage II	31-39	482	42.91
Stage III	21-30	192	17.11
Stage IV	<20	242	21.57

Table 5 Distribution of OSMF subjects according to their signs and symptoms in different grades

Signs and symptoms	Stages				Total	
	I	II	III	IV	No	%
Burning sensation to hot and spicy food	87	325	192	242	846	75.3
Dryness of mouth	0	77	107	147	331	29.4
Presence of white fibrous bands	0	397	192	242	831	73.9
Limitations of mouth opening	7	342	192	242	783	69.7
Restricted tongue movement	0	0	27	52	79	7.0

DISCUSSION

There is compelling evidence to implicate the habitual chewing of areca nut with the development of OSMF. Areca nut is said to cause precancerous conditions but apart from the carcinogenic potential, it is also addictive, resulting in development of dependence symptoms¹². Commercially, areca nut is available in two forms, i.e., areca nut without tobacco e.g. supari, sweet supari etc. and areca nut containing tobacco e.g. gutka, kharra, pan masala, etc. Our study found OSMF prevalence of 4.1% among habitual chewers of the Darbhanga population which was in accordance with Kumar et al (2016)¹³. In the present study the patients affected by OSMF were higher in group with habit of gutkha (combination of areca nut and tobacco) chewers than areca nut chewers alone followed by group consuming betel quid with areca nut, this was in accordance to a report by Murti PR et al⁷ which also reported that an increase in gutkha chewing over areca nut recently could be due to the easy availability of attractive, tiny, multicolored gutkha packets. The alkaloid present in areca nut i.e. Arecoline, is converted to arecadaine, which stimulates fibroblastic activity in oral mucosa resulting in excessive collagen deposition seen in OSMF.^[14,15,16] This finding proves the major etiological factor in OSMF to be areca nut chewing habit in various forms, which is addictive and psychoactive in nature. Evidence from other studies shows that areca nut chewing suppresses hunger and reduces appetite during working hours or until people find time to have food. Sullivan and his colleagues found that people chewed it to get energy rather than for its psychotropic effects. But nevertheless, areca nut is the 4th most addictive substance in the world and is associated with a dependence syndrome.^[17] This habit was seen especially in young males as they got exposed to these products at an early age through their friends and colleagues or resorted to it in a hope to overcome stress and tension. Financial independence also acted as a contributing agent.^[14] Several factors have been implicated as predisposing factors without ruling out a single etiology, that include apart from areca nut and gutkha (containing areca nut and tobacco), chilly consumption, nutritional deficiency, genetic susceptibility and autoimmunity.^[14,15,18] Capsaicin is an active ingredient of chillies, which causes slight inflammation of oral mucosa. Hence, people experienced a burning sensation in their mouth while eating spicy food, which could be easily eaten by them previously.^[14,15] The present study showed a greater fraction of patients in 21-30 years and 31-40 years age groups were affected which was in accordance with Kumar S.(2016)¹³. Higher male: female ratio was reported in our study which were similar to other studies done by Anuradha P et al (2011)¹⁹, Afroz N et al (2006)²⁰ and Kumar S.(2016)¹³. The higher involvement of males in all studies, reflects their easy access to the abusive habits when compared with females.

Clinical grading of patients revealed shocking results, the patients visited Dental Department at the college hospital only after OSMF had progressed to an advanced stage and they experienced burning sensation, reduced mouth opening and difficulty in chewing food. This is similar to the study by Tupkar JV et al (2007)¹⁴ having majority patients in grade II and grade III categories. Tongue involvement was seen at a later stage, especially among grade IV patients.

CONCLUSION

This comprehensive study showed that the incidence rate of OSMF in patients visiting Dental Department at Darbhanga Medical College and Hospitals, Laheriasarai Darbhanga was 4.1%, which is significantly high. Males in 2nd decade of their life were mainly affected. Majority of these patients were habituated to chewing Gutkha (areca nut combination with tobacco) than areca nut alone. Gutkha chewing habit and areca nut chewing habit, pointing towards the glaring fact of its increasing popularity among youngsters and young adults due to peer influence, desire to experiment or stress. Intake of spicy food was also a significant contributing factor. This calls for a dire need to conduct oral health care programs especially for youngsters and young adults about the ill-effects of areca nut consumption in all available forms, and to discourage them from doing so by making them aware of its manifestations.

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