



RESEARCH ARTICLE

TO STUDY THE PREVALENCE OF ORAL SUBMUCOUS FIBROSIS IN BIRATNAGAR, NEPAL

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ABSTRACT

Aim: To study and determine the prevalence of oral submucous fibrosis and to evaluate its association with habitual Gutkha chewing, areca nut, betel nut and betel leaf and other associated adverse habits.

Material and Methods: The Oral submucous fibrosis patients in the outpatient Department of Oral Medicine and Radiology, Noble Medical College and Hospital, were examined. The study design was a cross sectional study. A total of 589 OSMF patients were screened out of a total of 1200 patients. Complete clinical history, including demographic details, various oral habits – the frequency (number of times per day), duration (years of consumption) and type (Areca nut, Pan, Gutkha) were recorded in case record forms.

Result: A majority of patients belonged to Stage II with a mean \pm SD of 147.25. Many patients were males of age group 36-40 yrs and females in the age group 31-35 yrs.

Conclusion: The present study reveals that OSMF is closely associated with the use of chewing tobacco like gutkha, pan and areca nut. Special efforts are needed to educate the public about the adverse effects of tobacco chewing

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INTRODUCTION

Oral submucous fibrosis (OSMF) is "an insidious, chronic disease which usually affects any part of the oral cavity and sometimes the pharynx. Though it is occasionally preceded by or associated with vesicle formation, it is always associated with juxta-epithelial inflammatory reaction followed by fibro-elastic change of the lamina propria, with epithelial atrophy leading to stiffness of the oral mucosa and causes trismus and inability to eat." (Pindborg, 1966; Rajendran, 1994) Worldwide, estimates of OSMF shows a confinement to Southeast Asians, with an overall prevalence rate of approximately 0.2–0.5% and a gender prevalence of 0.2–2.3% in males and 1.2–4.57% in females (Phatak, 1979). Oral Submucous Fibrosis has been reported almost exclusively among Asiatics, with a reported prevalence ranging up to 0.4% in the population (Gupta *et al.*, 1998). The association with cancer is highly probable but not yet conclusive (Gupta *et al.*, 1998). The use of tobacco and its various forms are one a major risk factors of oral cancer. Although there are regional variations in the type of areca nut products used. The betel quid (BQ) was the most popular and prevalent habit in ancient culture.

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But in 1980, both areca quid products such as Pan masala and Gutkha were introduced in market as commercial preparations. Since then there has been an increase in the use of Pan Masala and Gutkha in the younger age groups, which had lead to increased incidence of OSMF (More *et al.*, 2012) Pan Masala includes areca nut, catechu, lime, flavours and spices. Recently, it has been documented that the habit of chewing Gutkha has gained considerable popularity among the younger men in this region. However, only a few reports have been published on the gender specificity in relation to the habit patterns and the severity of OSMF disease (Chole *et al.*, 2012) Hence the present study is conducted to evaluate the paucity of gender specificity prevalence and disease severity.

MATERIALS AND METHODS

The Oral submucous fibrosis patients in the outpatient Department of Oral Medicine and Radiology, Noble Medical College and Hospital, were examined. The study design was a cross sectional study. The duration of the study was one year six months between year 2015 to 2016. OSMF patients were divided according to gender. A total of 589 OSMF patients were screened out of a total of 1200 patients. Complete clinical history, including demographic details, various oral habits – the frequency (number of times per day), duration (years of consumption) and type (Areca nut, Pan, Gutkha) along with

tobacco use were recorded in case record forms. The selected patients were divided into four groups according to their clinical stage (Chole *et al.*, 2012; Karthik *et al.*, 2012).

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 oropharynx, with/without stomatitis.

Stage III: Interincisal mouth opening between 15 and 25 mm; presence of palpable fibrous bands in buccal mucosa and/or oropharynx, 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, e.g., 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. This study was conducted on the basis of the type of habit and divided in three groups (Table 2):

• Group 1: Gutkha Group 2: Pan 3: Arecanut. We also noted that if a person was taking a combination of Gutkha or areca nut or all the three, it was asked by the patient which tobacco product was taken the most and this was considered the most. We excluded patients who were suffering from any systemic diseases. Children below the age of 10 years were also excluded from this study.

Statistical Analysis

Data was precoded and a master chart was prepared. Descriptive statistics, Chi square test and t test were used for association between the variables. SPSS 16 was used for data analysis.

RESULTS

Table 1. Distribution of the OSMF patients according to clinical stages of OSF

Stage	N	%	Mean	SD
Stage I	154	26.15	147.25	5.23
Stage II	203	34.4		
Stage III	140	23.7		
Stage IV	92	15.6		

P<0.0001

Results

A total of 1200 patients reported in the OPD in the period between January 2017 to June 2017. Out of the total OPD, 589 patients were diagnosed of OSMF. One of the patient did not give consent and was excluded from the study. Table 1. A majority of patients belonged to Stage II with a mean \pm SD of 147.25. The prevalence was statistically significant. Most of the OSMF patients gave history of chewing Gutkha followed by Pan and areca nut. Majority of the patients reported in Stage

II OSMF (Table 2). There was a statistically significant difference in the staging and adverse habit.

Table 2. Distribution of the OSMF patients according to adverse habit

Stage	N	Habit	n	%(Out of total patients)
Stage I	154	Gutkha	63	40.9
		Pan	59	38.3
		Arecanut	32	20.7
Stage II	203	Gutkha	88	43.3
		Pan	65	32.01
		Arecanut	50	24.6
Stage III	140	Gutkha	92	65.7
		Pan	30	21.4
		Arecanut	18	12.8
Stage IV	92	Gutkha	57	61.9
		Pan	23	25
		Arecanut	12	13.04

P<0.0001

Table 3. Gender based OSMF distribution

Type	Age group	Males(n=386)	Females(n=203)	N(%)
1	11-15	12	0	12(20.3)
2	16-20	72	3	75(12.7)
3	21-25	53	0	53(8.9)
4	26-30	45	6	51(8.6)
5	31-35	96	42	138(23.4)
6	36-40	152	108	260(44.14)

Table 3 shows that the majority of the patients were males of age group 36-40 yrs and females in the age group 31-35 yrs.

Table 4. Duration of Habit

Duration of Habit	Total (N=588)	%	Stage	Number	%	Mean \pm SD
2-5 years	288	48.9	I	98	34.02	72 \pm 2.43
			II	106	36.8	
			III	62	21.5	
			IV	22	7.6	
5-10 yrs	204	34.6	I	0	0	50 \pm 2.6
			II	6	2.9	
			III	118	57.8	
			IV	80	39.2	
More than 10 yrs	98	16.6	I	0	0	22 \pm 3.2
			II	8	8.16	
			III	70	71.4	
			IV	20	20.4	

P<0.0001

Table 4 shows that the majority of patients have duration of habit 2-5 years with OSMF. There was a statistically significance in the duration of habit and staging of OSMF

Table 5. Frequency of Habit

Duration of Habit	Total (N=588)	%	Stage	Number	Percentage	Mean \pm SD
2-5 yrs	238	40.4	I	88	38.05	56 \pm 2.4
			II	92	40.7	
			III	26	11.5	
			IV	22	9.7	
5-10yrs	236	38.4	I	0	0	58 \pm 2.6
			II	144	61.3	
			III	76	31.9	
			IV	16	6.7	
More than 10 yrs	124	21.08	I	0	0	30 \pm 3.2
			II	6	4.8	
			III	96	77.4	
			IV	22	17.7	

P<0.0001

The prevalence of frequency of adverse habit was statistically significant

DISCUSSION

Oral submucous fibrosis is a common lesion of the oral cavity which can be transformed into malignancy in a long duration. Early detection of it is important for which clear concept in etiopathogenesis is required (Baig *et al.*, 2012). Though this disease is common in Nepal but there are only few studies dealing with OSMF. Our attempt was to have basic idea of clinical profile of Nepalese population. Biratnagar, a habitat of people with diverse ethnicity is famous for consumption of pan, guthka and betel nuts. The location of the present study is helpful to get maximum number of cases with different ethnic groups. The proportion of this disease is more in male in our study which is in correlation with studies done in neighbouring countries (Kiran Kumar *et al.*, 2007; Pandya, 2009; Wahi, 1966; Avon *et al.*, 2004; Sushma, 2005; Sushma, 2005; Jang *et al.*, 2001) with similar life style and culture. This difference is probably due to more outdoor activities in male and more accessibility of preparations. However in another study done in south India it was more found in female (Hashibe *et al.*, 2001) Average age at presentation was 25.6 years which is similar to study done in neighbouring country India (Jang *et al.*, 2001). Occupation doesn't matter much; it can be seen in all different types of job holders and unemployed. Gutkha was the commonest preparation unlike in study by Pandya (2009) where it was in less than 1/4th patients. This may be a preference of preparation in that locality. The exact data of how many people consume these preparations is not available for Nepal but a study from India showed that over 10% of urban males and 8% of rural males use gutkha or pan with tobacco (Hashibe *et al.*, 2002).

Commercially freeze dried products such as pan and gutkha have high concentrates of areca nut per chew and appear to cause OSMF more rapidly than by self prepared conventional betel quid that contain smaller amounts of areca nut. In this study, gutkha chewing with alcohol and smoking (bidi) were causes of stage III and IV OSF and oral leukoplakia (6.16%), as well as oral cancer (3.57%). Alcohol consumption has been associated with elevated risks of oral leukoplakia, (Prabha *et al.*, 2007) OSF, (Sinor *et al.*, 1990) and erythroplakia (Sinor *et al.*, 1990) Tobacco smoking involves the inhaling of smoke, which may have less contact with the mouth and more contact with the throat and lung compared to tobacco chewing. Smokeless tobacco is an important etiological factor in the cancer of the mouth, lip, tongue, and pharynx. The Indian subcontinent has one of the highest rates of oral cancer in the world. 65% of all cancer in men and 33% of all cancers in women are tobacco related. Annual incidence of oral cancer is said to be 10/10000 of males (Baig *et al.*, 2012). Smoking consumption alone has been found to have no effect in the development of OSMF, however, its addition to areca nut consumption can be a risk factor for OSMF (Prabha *et al.*, 2007)

A male predominance in OSMF cases was reported by Sinor *et al.* (1990) in India. Male predominance in our study can be due to easy accessibility for males to use areca nut and its products more frequently than females in our society along with the changing lifestyles of youngsters. In this study, male patients were more in comparison to females, with a prevalence of 95.42% compared to 4.47% in females. One significant clinical finding noted was that the number of cases found of OSMF were between duration 2- 5 years. This can be explained by the fact that the tissue response and tissue changes to an irritant is

more noted in this period with changes in the hyaline formation histologically. This clinical feature is not yet reported in any of the studies. In the present study, majority of OSMF (48.3%) cases were in grade III (20–29 mm) severity with an average mouth opening of 24.62 mm, which is in contrast with Cox's study (35), who found an average mouth opening of 34 mm in the Nepalese OSMF cases.

Conclusion

The commercially available areca nut and tobacco (gutkha) by products have shown higher severity in terms of clinical staging. The current study found that although habit is variable in the form of duration, frequency; chewing for a longer duration and swallowing without spitting was found to correlate significantly with the severity of clinical staging. Special efforts are needed to educate the adolescent population using available modalities such as oral health exhibition and camps.

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