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# "A prospective study to determine the distribution of oral submucous fibrosis according to gender in various age groups and to study the role of habits in developing oral submucous fibrosis"

Priyanka Rastogi[1] Aditya Rastogi[2] Ekta Agarwal[3]
[1](*Assistant professor Dept. of Dental Surgery Saraswati medical college Hapur,U.P,INDIA*)
[2](*Assistant professor Dept. of General Surgery Subharti medical college Meerut,U.P,INDIA)*
[3](*Senior Resident Dept. of ENT Subharti medical college Meerut,U.P,INDIA)*

***Abstract***
***Objective:-****A prospective study to determine the distribution of oral submucous fibrosis according to gender in various age groups and to study the role of habits in developing oral submucous fibrosis.*
***Material and Methods***
*The study group comprised a total of 50 patients who reported to Oral Medicine & Radiology Department diagnosed with oral submucous fibrosis. Thorough detailed history regarding the habits was taken and clinical examination was performed in all subjects using a standardised proforma. Complete clinical history, including demographic details, various oral habits – the frequency (no of times / day), duration (years of consumption) and type [Areca nut, kharra/mawwa, paan masala (AQ), gutkha, (AQ+T), BQ] along with tobacco use were recorded in case record forms.****Criteria for diagnosis of OSF (anyone)***
*Presence of fibrous bands in labial /Buccal mucosa*
*Loss of elasticity of Buccal/labial mucosa and Inability to open mouth*
***Results***
*In the present study, the age of the patient was ranging from 16-60 years with a peak incidence from 25 to 29 years of age (Table 1). Most of the study population was in the age group of 25-29 years (15 out of 50 cases).The mean age in our study was 28.9 [91] The M:F ratio as seen in our study(M:F=23:2)Our study supports that the most common etiological factor of OSF is gutkha chewing In the present study56.00% patients of OSF were having a habit of only gutkha chewing*
***Conclusions:-****In our sample we observed thatOSF was much more common in males than females with a preponderance of almost (92%) in males. The peak incidence seen in the age group of 25-29 yrs which accounted for almost (30%) of the cases.Gutkha chewing was the most common etiological habit which accounted for almost (56%) of patients. The habit of gutkha chewing was almost same in males & females with (56.5%) in males as compared to (50%) in females.*

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## I. Introduction

Oral Cancer is a major cause of disease and death throughout the world.[1] Oropharyngeal cancer is the fifth most common cancer worldwide in men and the seventh in women, but there are marked geographical variations.[2] Tobacco and alcohol use as well as diet have been implicated in the large increase in oral cancer mortality.[3] Of these, tobacco use and alcohol are identified as major risk factors[4], but interaction and summation of all factors may play a role. The terms 'precancer', 'precursor lesions', 'premalignant', 'intra epithelial neoplasia' and potentially malignant' have been used in the international literature to broadly describe clinical presentations that may have a potential to transform into cancer.[5]The major concern now a days are potentially malignant disorders like Oral sub mucous fibrosis, leukoplakia etc. These disorders arise from oral habits of Areca nut /gutkha, tobacco chewing, pan masala chewing, &smoking etc.[6]

Oral submucous fibrosis (OSF) is a high risk precancerous condition, which was first described in the early 1950's. It is characterized by changes in the connective tissue fibers of the lamina propria and deeper parts leading to stiffness of the mucosa and restricted mouth opening.[7] Oral submucous fibrosis is predominantly seen in India, Bangladesh, Sri Lanka, Pakistan, Taiwan, China and among other Asiatic countries with a reported prevalence ranging up to 0.4% in Indian rural population (Murti et al., 1995).[8] Pindborg and Murtyevaluated the malignant potential of OSF and reported an incidence of 4.5% in their group of patients on a 15 year follow-up

study. OSF carries a high risk of transition to oral cancer. In an epidemiologic study in India, the malignant transformation rate was 7.6% over a period of 17 years. In 1956, the possible precancerous nature of OSF was first mentioned by ***Paymaster*** who described the development of a squamous cell carcinoma in one third of the cases of sub mucous fibrosis among the patients in Bombay.[10]

It is now strongly believed that there is a definite relation of the condition with the habit of areca nut chewing. Areca nut is deeply rooted in Indian culture and been used as a mouth-freshening agent that has had various symbolic roles throughout Indian history[6]. Epidemiological and in vitro experimental studies have shown that chewing areca nut **(Areca Catechu**) is the major aetiological factor for OSF (Caniff an Harvey, 1981). Although there are regional variations in the type of areca nut products used in India. The betel quid (BQ) was the most popular and prevalent habit in ancient Indian culture.[7] But according to various studies such as (Shah N Sharma P. et al 1988**,** Hazarey 2007) it was found that chewing of areca nut/quid or pan masala (a commercial preparation of areca nuts, lime, catechu and undisclosed colouring, flavouring and sweetening agents) was directly related to OSF. Also, pan masala was chewed by a comparatively younger age group and was associated with OSF changes earlier than areca nut/quid chewing. However, chewing or smoking tobacco with various other chewing habits did not increase the risk of developing OSF. It was also found that frequency of chewing rather than the total duration of the habit was directly correlated to OSF[9].

## II. Material and Methods

The present study was conducted in the Department of Oral Medicine and Radiology, Subharti Dental College, Meerut. Ethical approval was taken from ethical committee prior to commencement of the study.The study group comprised a total of 50 patients who reported to Oral Medicine & Radiology Department diagnosed with oral submucous fibrosis. Thorough detailed history regarding the habits was taken and clinical examination was performed in all subjects using a standardised proforma. Complete clinical history, including demographic details, various oral habits – the frequency (no of times / day), duration (years of consumption) and type [Areca nut, kharra/mawwa, paan masala (AQ), gutkha, (AQ+T), BQ] along with tobacco use were recorded in case record forms.

**Criteria for diagnosis of OSF (anyone)**

- Presence of fibrous bands in labial /Buccal mucosa
- Loss of elasticity of Buccal/labial mucosa
- Inability to open mouth

**ARMAMENTARIUM**

**For clinical examination of the patient**

Routine diagnostic instruments (eg. Dental chair with artificial illumination facility, 2 mouth mirrors (no.5), straight probe etc.) with using special universal precautions barriers (eg. mouth mask, sterile gloves.)

All the results were statistically analysed by Chi square test, Anova and correlation coefficient test.

## III. Results

Although a large number of patients with clinical oral submucous fibrosis reported to the Department of Oral Medicine and Radiology, Subharti Dental College, Meerut, only 50 patients who were included in the study.

**Age & gender distribution of the study group: (Table-1, Figure- 1)**

The table shows the distribution of males & females in different age groups. Further in each group there was no statistically significant difference between males & females. Out of total 50 patients in the study group, 46 were males & 4 were females. The male–female ratio was 23:2. The maximum patients were in the age group of 25-29 yrs.15 patients were in the age group of 25-29yrs out of which , 14(30.4.%) were males &1 (25.0%) was female. 11 (23.9%) were males &3(75.0%) were females in the age group of > 40yrs. 9(19.6%) were males in the age group of 20-24yrs.1(2.2%) was male in the age group of <=19. 8 (17.4%) were males in the age group of 30-34 yrs. 3(6.5%) were males in the age group of 35-39yrs .

**Age distribution in the males & females:**

The table shows that there was no statistically a significant difference in distribution of males & females in different age groups

Mean frequency of male is **32.152 ± 10.701**

Mean frequency of female is **44.00 ± 11.106**

**Habits distribution of the study group: (Table2, Figure2)**

The table shows percentage distribution of different habits. It was observed that the intake of betel nut (0%) was least in the study group. However maximum percentage 28(56%) was noticed in gutkha chewers. The second most common habit noticed was in gutkha + tobacco chewer. 8 (16%) patients chewed gutkha + tobacco, 5 (10%) patients chewed pan masala & 4(8%) chewed betel quid.

**Association of habits vs. Gender: (Table3, Figure3)**

The table shows maximum percentage belongs to gutkha. Further in each group there was no statistically significant difference between habits & gender. Out of a total of 50 patients in the study group ,28 patients chewed gutkha, out of which 26(56.5%) were males & 2 (50%) were females. 8 patients chewed gutkha + tobacco, out of which 7 (15.2%) were males & 1 (25.0%) was female. 4 (8.7% ) patients chewed betel quid, all were males. 5 patients chewed pan masala, out of which 4 (8.7%) were males & 1 (25.0%) was female. 1(2.2%) male did not have any habit.

**TABLE 1: AGE AND GENDER DISTRIBUTION**

| Age group Year | Male (n=46) | Female (n=4) | Total (n=50) |
|---|---|---|---|
| **<=19** | 1(2.2%) | 0 | 1 |
| **20-24** | 9(19.6%) | 0 | 9 |
| **25-29** | 14(30.4%) | 1 (25.0%) | 15 |
| **30-34** | 8(17.4%) | 0 | 8 |
| **35-39** | 3(6.5%) | 0 | 3 |
| **>40** | 11(23.9%) | 3(75.0%) | 14 |
| **Total** | **46 (92.0%)** | **4 (8.0%)** | **50** |
| **Mean ± SD** | **32.152 ± 10.701** | **44.00 ± 11.106** | **33.100 ± 11.103** |

**$x^2$ = 5.2**

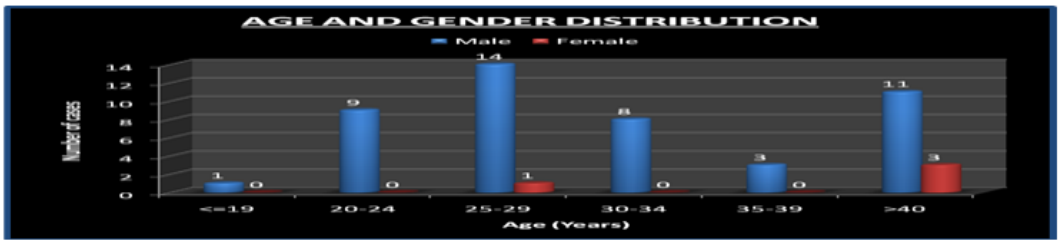


**TABLE 2: HABITS**

| Habit | Case (n=50) | Percentage |
|---|---|---|
| Betel Nut | 0 | 0.00% |
| Betel Quid | 4 | 8.00% |
| Pan Masala | 5 | 10.00% |
| Gutkha | 28 | 56.00% |
| Tobacco | 1 | 2.00% |
| Mixed habits | | |
| Gutkha+Tobacco | 8 | 16.00% |
| Gutkha+Tobacco+Pan | 2 | 4.00% |
| Gutkha+Pan | 1 | 2.00% |
| Non habit | 1 | 2.00% |

**92; df = 5; p = 0.381; Not Significant**

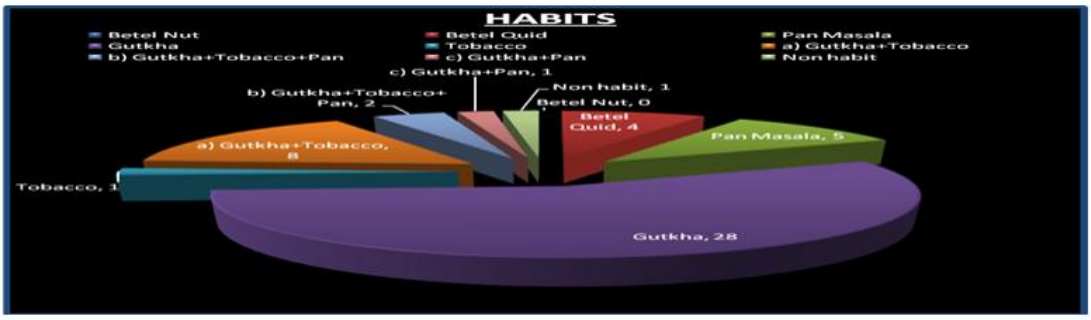

**TABLE 3: ASSOCIATION OF HABITS VS GENDER**

| Habits (n=50) | Male (n=46) | Female (n=4) | Total (n=50) |
|---|---|---|---|
| Betel nut | 0 | 0 | 0 |
| Betel quid | 4(8.7%) | 0 | 4 |
| Pan masala | 4(8.7%) | 1(25.0%) | 5 |
| Gutkha | 26(56.5%) | 2(50%) | 28 |
| Tobacco | 1(2.2%) | 0 | 1 |
| Mixed habits | | | |
| Gutkha+Tobacco | 7(15.2%) | 1 (25.0%) | 8 |
| Gutkha+Tobacco+Pan | 2(4.3%) | 0 | 2 |
| Gutkha+Pan | 1(2.2%) | 0 | 1 |
| Non habit | 1(2.2%) | 0 | 1 |
| Total | 46(92.0%) | 4(8%) | 50 |

**$x^2$ = 2.009; df = 7; p = 0.959; Not Significant**

## IV.Discussion

In the present study, the age of the patient was ranging from 16-60 years with a peak incidence from 25 to 29 years of age (Table 1). Most of the study population was in the age group of 25-29 years (15 out of 50 cases).The mean age in our study was 28.9 years consistent with 29.04 years by **Katharia et al,**[89] and 30 years **by Maher et al.**[53] This observation is different from that of Pindborg et al who reported the maximum number of OSF cases in the age group of 40-49 years in their study. This changing trend of the disease presently indicates that involvement of more number of younger age group and 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. Different studies suggest that male female predominance and age ranges vary among different parts of country. Some of the epidemiological surveys in India have shown a female predominance in the occurrence of this entity. A male predominance in OSF cases was shown by various current studies [**Kiran Kumar et al (2009),**[72] **Sinor et al**,[14] **Tinky Bose** and **Anita Balan (2007)**,[90] **SaurabhGoel et al (2010)**].[91] The M:F ratio as seen in our study(M:F=23:2)was not very close to the study by **Ranganathan etal (2004)**[81] where the ratio was 9.9:1.Hazarey et al[6] hypothesized that there is a marked difference in habits, their frequency & duration, signs and symptoms, disease severity in women when compared with men seeking dental care for OSF.Our study supports that the most common etiological factor of OSF is gutkha chewing which is similar with **Bhonsle et al (1987)**[33] who found similar findings. In the present study56.00% patients of OSF were having a habit of only gutkha chewing which however is much different from that found by **Kiran kumar et al (2009)**[72] and **Saurabh Goel et al (2010)**[91] where only 14.67% and 30% study patients chewed gutkha respectively. According to them pan masala chewing was observed more commonly in their study sample. This could possibly suggest a variation in the type of habits in different regions of India. However, most studies indicate that habitual chewing of pan masala/gutkha is associated with earlier presentation of oral submucous fibrosis than betel quid use

Moreover, mawa/khara were most commonly consumed by females compared to males who consumed gutkha predominantly reported by **Hazarey et al (2006),**[6] in contrast to this in our sample we found both males &females indulged equally in gutkha habit.

## V.Conclusions

The present study was conducted in Department of Oral medicine and Radiology, Subharti Dental college, Meerut. A total of 50 patients of oral submucous fibrosis were included in the study.

The following conclusions were drawn.In our sample we observed that

OSF was much more common in males than females with a preponderance of almost (92%) in males. The peak incidence seen in the age group of 25-29 yrs which accounted for almost (30%) of the cases.Gutkha chewing was the most common etiological habit which accounted for almost (56%) of patients. The habit of gutkha chewing was almost same in males & females with (56.5%) in males as compared to (50%) in females.The maximum number of patients were seen in clinical stage II &most of them were in the age group of 25-34yrs.

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