

IMPACT OF CLINICAL STAGES OF ORAL SUBMUCOUS FIBROSIS (OSMF) ON ORAL HEALTH RELATED QUALITY OF LIFE OF OSMF PATIENTS

Sudarsan R

Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 600077, Tamil Nadu, India.

Dr. Sangavi .R

Senior lecturer, Department of oral medicine, Radiology and Special care dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai 77, Tamil Nadu, India, Email ID: sangavir.sdc@saveetha.com

Dr. Adimulapu Hima Sandeep

Associate Professor, Department of conservative and endodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha university, Chennai – 600077, Tamil Nadu, India, Email Id: himas.sdc@saveetha.com

Abstract

INTRODUCTION

The definition of health in the 5th century BC by Pindar was “harmonious functioning of the organs” which prioritizes all the aspects of health including the oral health of an individual. It is a vital part of general health however people often do not give much concern to one’s oral hygiene and health.. The popularity of tobacco chewing and smoking has become tenfold in the last decade, and it has started to defy rational explanation. Smokers these days are of all ages from early teenagers to very old age, mostly men although certain geographical areas do have women as the prevalence. The habit has caused many deleterious and debilitating effects in the oral cavity and mucosa carrying a very high risk of leading to oral carcinomas. Out of all the oral cancers that are present, tobacco consumption certainly affects 50% of all the cancers in India. If the rate of consumption, and lack of awareness of the ill effects of tobacco continues, the WHO predicts that mortality may exceed by 1.5 million in the next few years.

Although there are various tobacco products both smoke and smokeless types, smoking is the most common which includes cigarettes, cigars, pipes or water pipes. Among the smokeless tobacco there are many products that are easily available of which Pan and Gutka is the most common chewing habit found in previous studies with 63.7%. Potentially malignant Disorder (OPMD) arises due to the chronic use of tobacco either smoke or smokeless or in some cases both. The southeast asian countries have the highest rate of malignancy involving the oral cavity which is 12.6 per 100000 whereas in the western geography oral malignancies represent only 3%. Oral submucous fibrosis [OSMF] is a potentially malignant disorder defined as “chronic insidious scarring disease of the oral cavity”. The sites usually affected are buccal

mucosa , labial mucosa, retromolar pad, soft palate and floor of mouth. Burning sensation of the mouth , xerostomia and characteristic blanching with marble like appearance. Limited mouth opening , dysphagia , and speech are observed in the advanced stages. There is a high risk of transformation of OSMF to carcinoma and the 5 year survival rates of patients remain 70-80% with stage 1 and 2 oral squamous cell carcinoma(OSCC). Therefore early detection of OSMF is important in preventing new incidences of OSCC and to develop strategies for prevention. The present study was hence conducted to determine the impact of clinical stages of oral submucous fibrosis (OSMF) on oral health related quality of life of OSMF patients.

Materials and method

The study was designed as a cross sectional analyzing all the patients with a tobacco chewing habit .The data of patient records were reviewed and analyzed between october 2021 and June 2022 from which 311 patients were habitual tobacco chewers.

Exclusion criteria : The records with Incomplete medical documentation, replication of results in different time periods with improper clinical photographs or diagnosis were excluded from the study.

Inclusion criteria: Patient details like age, gender, type of tobacco chewing were recorded. The clinical criteria for diagnosing OSMF was the presence of palpable fibrous bands, blanched oral mucosa and limited mouth opening.

The Clinical grading was as follows on

Grade I: Only symptoms, with no demonstrable restriction in mouth opening,

Grade II: Limited mouth opening. 20 mm and above

Grade III: Mouth opening less than 20 mm

Grade IV: OSMF advanced with limited mouth opening. Precancerous or cancerous changes seen throughout the mucosa.

The collected Data was described as frequency distribution and percentage. Statistical analysis was performed using Statistical Package for the Social Sciences ,version 22(SPSS).Descriptive analysis were based on quantitative variables and frequencies for categorical variables.A Chi square test was applied to determine the significance between groups. p value< 0.05 was considered to be statistically significant with a confidence interval of 95%.

Results and discussion

The sample size consisted of 311 patients where the male and female patients ranged between 15-80 years of age. The distribution and prevalence of OSMF among males and females were

87 were males (91.58%) and 8 were females (8.42%). Men showed a significantly higher predominance than women. According to age groups, the subjects were divided into three groups represented in (Table 2) where the age of prevalence peaked in the range 31-50 yrs (53%), followed by 51-80 years (23.2%) and 18-30 years (21.1%).

Bilateral buccal mucosa (70.5%) was found to be the most prevalent site among the target population followed by unilateral buccal mucosa (25.26%), palatal mucosa (3.16%) and labial vestibule (1.05%). (Figure 1) Out of 95 habituated subjects, 40% were in the habit of taking Pan, 25.26% were in the habit of taking Areca nut, 9.47% Hans, 25.26% were in the habit of taking tobacco and gutkha collectively. (Figure 2) Most of the patients reported to the hospital were found to have early stages of OSMF with grade 1 (43.1%) being the most prevalent followed by grade 2 and grade 3 with 32.6% and 24.2% respectively. (Figure 3). Pan was the most common type of tobacco habit associated with males (37.89%) compared to females. This was found to be statistically significant. ($p=0.02$) (Figure 4) Also, Pan chewing was the most prevalent habit among individuals in the 31-50 year age group. However, there was no significant difference in the habits between the different age groups. ($p=0.1$) (Figure 5)

The increasing burden of Oral cancer in India, is due to the combined effect of the ageing of population as well as the high prevalence of cancer risk factors. It has been estimated that tobacco is one of the cause for 43% of cancer deaths worldwide (1). Tobacco use has been found to account for about 90% of cancers in the oral cavity (2). OSMF is one of the many diseases of the oral cavity that has potential for malignant transformation if the tobacco consumption isn't ceased. The prevalence of OSMF in this study was found to be 30.5%. It was the second highest oral lesion reported in the hospital after Leukoplakia among habitual tobacco chewers. Previous results from other states of India and neighboring Asian countries revealed lower prevalence (2.2%) in a much larger sample size (3), (4). With increasing immigration trends and presence of large South Asian communities in the western world, OSMF is seen increasing significantly where it was previously seldom encountered (5).

This study showed that men (91.58%) had a significantly higher OSMF prevalence than women (8.42%). (6) In India found male predominance in OSMF cases. Srivatsava et al also revealed similar results in their study among patients visiting dental college in Kanpur where male patients were more (97.67%) compared with 2.33% in females. (7). According to a study conducted in Patna, Bihar it was observed that the Male : Female ratio was 2.7:1 (8) Male predominance can be due to their easy accessibility and kind of work that urges them to use areca nut and Pan and other tobacco products more frequently than females (7).

This study found that OSMF was common in 31-50 yr old males (53%). Previous studies from Indian Subcontinent revealed maximum number of patients in the 21-30 yrs and 21-40 yrs age groups which is a much younger age range than this study. (9). In an epidemiological survey conducted on the geriatric population in Jodhpur, the prevalence of OSMF was maximum in 15-24 years of age group (42.4%) (9,10) Similar observation was made by Sher et al while

examining 1000 Indians in South Africa(9–12). This study showed better results when compared with previous studies where youngsters were the affected age group. People who start smoking at an early age are more likely to develop a severe addiction to nicotine than those who start at a later age and less likely to quit the habit.(13) This result could be because of increased social encounters, economic liberty and easy accessibility they get at this age in a rapidly developing nation like India. Different working environments as well as cultural setbacks could also be the reason for varying results in different regions. Therefore, during this age, they indulge in various chewing habits such as Pan, betel nut, gutka, pan masala, smoking, alcohol, either to relieve stress, as a fashion or due to peer pressure(14).

The most common site to be affected in the current study was found to be bilateral buccal mucosa. Siriwardana et al revealed similar findings where there was a higher prevalence of OSMF in the buccal mucosa(15). Ahmad et al also reported that fibrosis was more in the buccal vestibule followed by the retromolar area and soft palate(12,16). The practice of placing quid in the buccal sulcus while chewing and moving it in different regions in the oral cavity with the tongue is frequently observed in habitual chewers(16). These results could contribute to the fact that the tobacco remain in contact with the buccal mucosa longer than the other site thus explaining the finding.

The findings of babu et al found gutka as the most prevalent form of tobacco(17). Other studies reported that commercial areca nut was more prevalent(18). On the contrary, OSMF patients in Karachi showed that people were more addicted to Pan than any other tobacco product such as gutka , areca nut and pan masala(19). Similarly in the present study habitual pan chewing was more prevalent than other forms of tobacco. Our study involving 95 OSMF patients showed that 40% were Pan users, 25.2% were areca nut users and only 16.8% were gutka users. Previous studies on the amount of nicotine content present in gutka, Pan and other readily available smokeless tobacco products estimated an average of 5.3 mg/g of tobacco(20). Even though these products have lower content of nicotine , it was observed that users often abuse it more frequently than smoked tobacco products(20,21). The reason could be the quality of the product, additives, and nicotine content influencing the patterns of tobacco consumption(22). Increase in pan and areca nut chewing over gutka recently could be due to the easy availability of attractive, tiny, multicolored pan masala packets(23). Present study could not specify the duration and frequency of habit due to certain limitations, previous studies found significant effect of duration and frequency of use of areca nut products on the incidence and severity of OSMF. Therefore these factors should be included in future studies.

In this study grade 1 OSMF was more prevalent (43.16%) than grade 2 and grade 3. Nigam et al showed similar findings in their study where 28 out of 64 subjects were having grade 1 OSMF(24). Most patients in the early stages of OSMF revert back to normal by proper management. The conversion of premalignant to malignant condition varies from 3% to 19%. 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. A recent study from India has reported that 25.77% OSF cases converted to oral squamous cell carcinoma (OSCC) which indicates the alarming malignant potential of OSMF(25).

Al-Attas SA et al conducted a study to assess the prevalence of oral mucosal and potentially malignant disorders associated with tobacco use among Saudi Arabian population with OSMF being 0.5%(26). Another study was conducted to estimate the prevalence of OPMDs in the 3142 patients, who underwent biopsy after the suspected lesions were not resolved within 2-3 weeks. Among these, 0.9% was an OPMD (one submucous fibrosis, three epithelial dysplasias, fourteen with hyperkeratosis/epithelial hyperplasia and nine with oral lichen planus). Men and smokers were associated with higher odds of having OPMD. Increasing age was associated with having OPMDs ($p < 0.01$)(27). Pindborg JJ conducted 2 studies on the association of oral mucosa lesions and OPMD, one in 1980 in India and South Africa and another one in 1984, with OSMF having a malignant transformation rate of 3-6% and 4.5% respectively. Out of 42 submucous fibrosis patients biopsied, 12% showed squamous cell carcinoma, 26% epithelial dysplasia, and 76% atrophic epithelium. These findings reinforced the hypothesis that submucous fibrosis is a potentially malignant disorder with a high malignant transformation rate. Murti et al (1985)(28) assessed malignant transformation rate in 66 patients at the end of 17 years of observation with the corresponding median observation period of ten years. Interesting observation made in the study was the development of Oral cancer in all the 5 patients, with a malignant transformation rate of 7.6%, all of them were women who had the habit of chewing tobacco and areca nut. Oral cancer developed 3-16 years after the diagnosis of submucous fibrosis.(28-30). In this background, the importance of identifying these conditions in patients with tobacco associated habits.(31)(32)

Though there is no dearth of evidence to underscore that tobacco products and its contents are human carcinogens(33), the use of these products has reached a great proportion that the government has no choice but to ban the use of these products.(34). The Central Committee of Food Safety of India has issued letters to the central government in support of banning the manufacturing and marketing of these products as it affects the quality of the person's life(35). In India, Tamil Nadu (November 19, 2001) *gutkha* and *paan* have been banned. Certainly, *gutkha* producers are on the defensive(36) as they state these regulations were not catastrophic and continued to export and follow illegal actions. Hence, from the practitioner's side much awareness has to be instilled in these patients and they should be periodically followed up for the presence of these conditions. Habit cessation has to be emphasized with continuous follow-up of the patients. Our team has extensive knowledge and research experience that has translate into high quality publications(37-46)

Table 1 shows the prevalence of oral mucosal lesions among habitual tobacco chewers

Oral lesion	Frequency	Percentile
Leukoplakia	104	33.3
Oral SubMucous Fibrosis	95	30.5
Smoker's palate	40	12.9
Tobacco pouch keratosis	24	7.8
Smokers melanosis	23	7.4
Squamous Cell Carcinoma	19	6.1
Lichen planus	1	0.3
Verrucous carcinoma	1	0.3
Epulis fissuratum	1	0.3
Chewer's mucosa	2	0.6
Ulceroproliferative lesions	1	0.3
TOTAL	311	100

Table 2 : shows the distribution of OSMF among various age group.

Age Group(Yrs)	Frequency	Percentile
18-30	20	21.1
31-50	53	55.8
51-80	22	23.1
Total	95	100

Figure 1: Shows the prevalence of OSMF based on the sites involved. The X axis depicts the sites and Y axis as the percentage of patients with OSMF. Bilateral buccal mucosa was the most common site involved with 70.5%

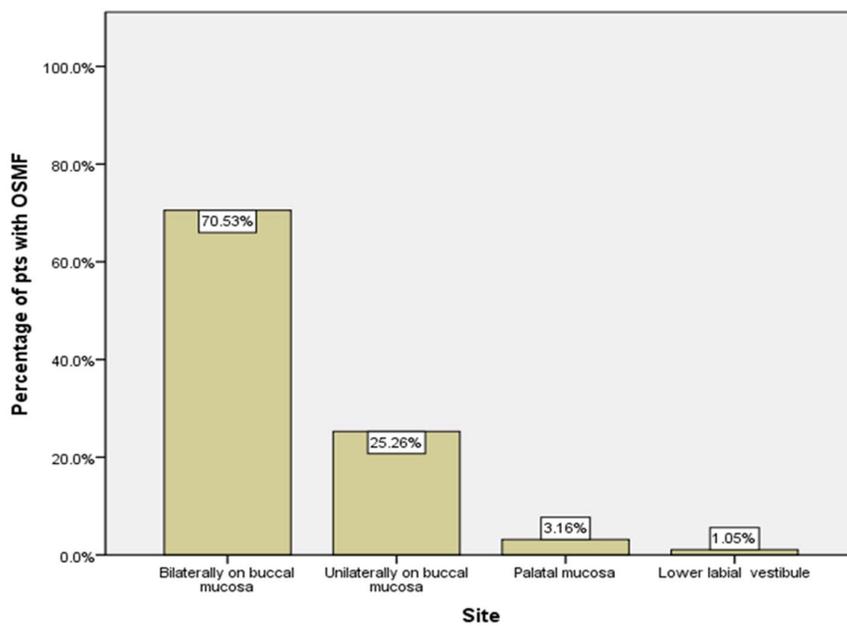


Figure 2 shows prevalence of OSMF on the basis of type of habits. The X axis depicts the various habits and Y axis the percentage of patients with OSMF. Pan was the most common habit associated with 40%.

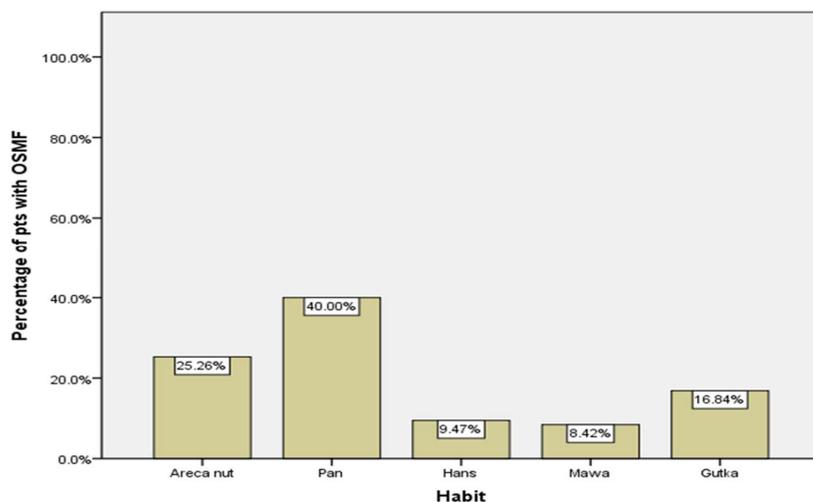


Figure 3: graph depicting the prevalence of grade dysplasia among the patients. Y axis depicts the percentage of patients with OSMF and X axis denotes the grade dysplasia as grade 1,2 and 3 with grade 1(43.15%) being the most common .

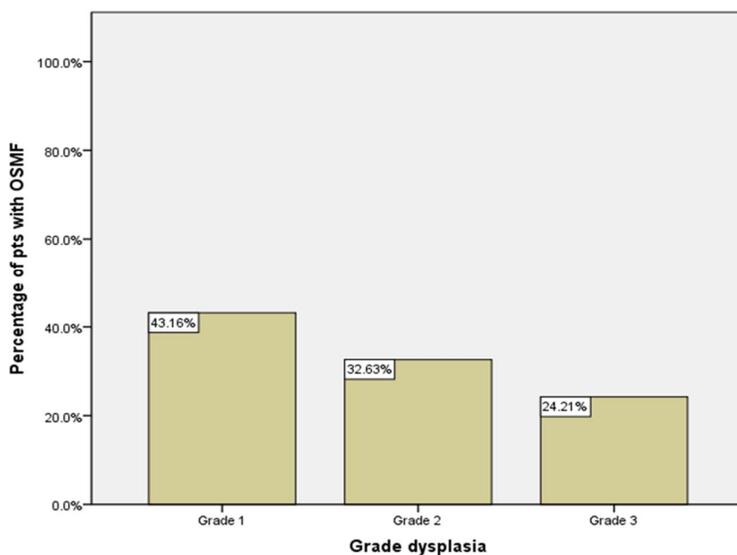


Figure 4: Bar graph showing the association between gender and habit of patients with OSMF. X axis represents the habits and Y axis the percentage of patients with OSMF. Blue represents males and green represents females. Pan was the most common type of tobacco habit associated with males (37.89%) compared to females. This was found to be statistically significant. Pearson Chi square, $p = 0.02$ ($P < 0.05$, statistically significant).

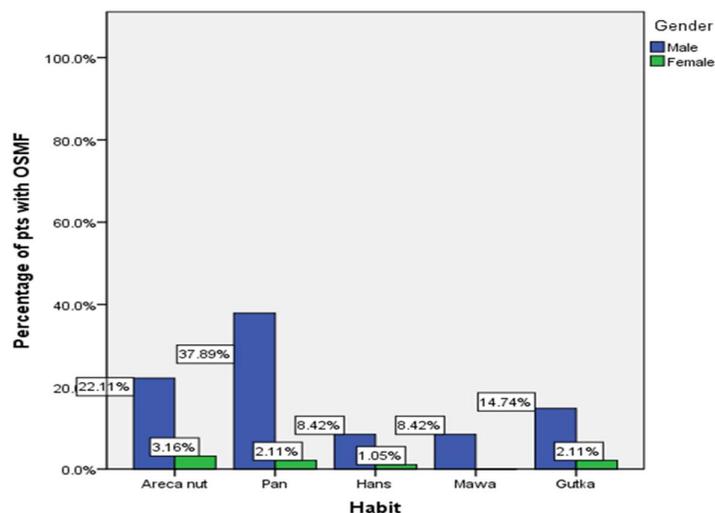
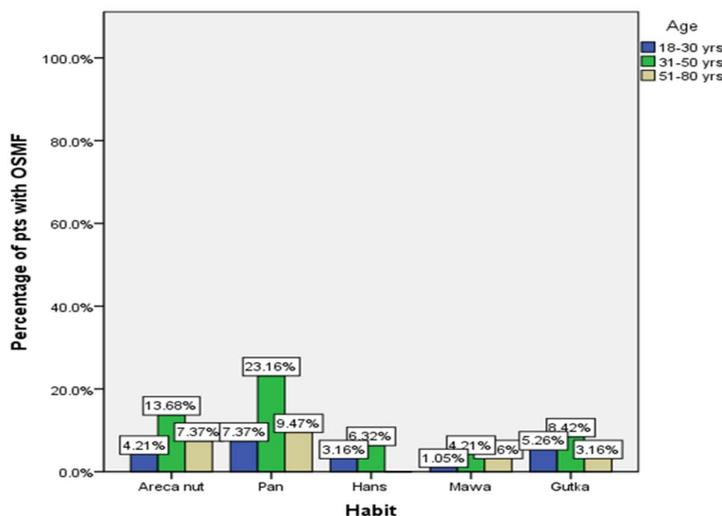


Figure 5: Bar graph showing the association between age and habit of patients with OSMF. X axis represents the habits and Y axis the percentage of patients with OSMF. Blue bar denotes 18-30 yr, green denotes 31-50 yr and yellow denotes 51-80 yr. Pan chewing was the most prevalent habit among individuals in the 31-50 year age group. However, there was no significant difference in the habits between the different age groups. Pearson Chi square test, $p = 0.1$ ($p > 0.05$, statistically not significant).



Conclusion

Considering the limits of the study, OSMF was more prevalent in males than in females with grade 1 dysplasia being the most prevalent. Age groups 31-50 years were more prevalent. Pan, areca nut and gutka chewing habits were common amongst the OSMF patients. Public health measures should be taken to create tobacco products to prevent new incidences of oral squamous cell carcinoma and mandatory screening of patients with habits. Follow up should be made mandatory for these patients to identify and stop disease progression at an early stage.

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