



Prevalence of OSMF cases in various age groups correlating with habits and treatment outcomes in Saveetha Dental College: A prevalence study

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Article History:

Received on: 12 Sep 2020
Revised on: 15 Oct 2020
Accepted on: 20 Oct 2020

Keywords:

Correlation,
age,
grade,
OSMF,
interincisal mouth
opening

ABSTRACT

Oral submucous fibrosis is a chronic, progressive, scarring precancerous condition of the oral cavity seen predominantly in the Indian subcontinent and southeast Asia. OSMF is caused by consumption of areca nuts and tobacco products. Patients suffer from trismus and other related problems. Interincisal mouth opening ranges between 24 to 55 mm in this study, hence making the study groups between I to III. The aim of the study is to find a correlation between age, habits and treatment outcome in OSMF patients. Data was procured from patient records of 86000 patients who visited from between June 2019 and March 2020 and analysis was done. Age is between 21 to 64 years. Male preponderance is seen 92.4% pan chewing is common (35.9%). Interincisal opening is between 24 to 55 mm, making the OSMF grade I and II. OSMF affects people aged 21 to 64 years and the interincisal mouth opening is between 24 to 55 mm, making the grades I and II.



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ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL3.3519>

Production and Hosted by

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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 (Pindborg *et al.*, 1968; Kumar, 2007)

Incidence of OSMF in India has increased over the last 40 years, from 0.03% to 6.42% (Pindborg *et al.*, 1968). Data published in Indian studies reveals that in India, 5 million OSMF patients are present (Aziz,

2010). OSMF is mostly seen between the age of 20 to 40 years (Canniff and Harvey, 1981). Mostly it affects any part of the oral cavity and sometimes the pharynx (Lemmer and Shear, 1967).

Oral submucous fibrosis is a chronic debilitating disease characterised by inflamed and progressive fibrosis of the submucosal tissues, leading to marked rigidity and eventual inability to open mouth.

It has a multifactorial etiology. Previous studies have proven that consumption of areca nuts is the major cause of OSMF (Canniff and Harvey, 1981). In 1980 both Areca nut quid products such as pan masala and Gutkha were introduced in Indian markets as commercial preparation.

Since then, there has been an increase in the consumption of masala and Gutkha in the younger age groups, thus leading to the incidence of OSMF (Gupta, 1998).

Hepatocellular cancer is the second most common cancer in the world (Gheena and Ezhilarasan, 2019) and OSCC is 6th most common cancer and can undergo malignant transformation due to delayed

OSMF treatment.

Pathogenesis of betel nut causing OSMF

1. A beetle that releases alkaloids like arecoline, arecaidine, guanine. On stimulation of the alkaloids, excessive fibroblasts are produced, leading to excessive collagen synthesis. After the synthesis of collagen, the collagen fibres need to be stabilised. Hence, the process of stabilisation takes place. The stabilised collagen then accumulates in the submucosa of buccal mucosa, which in turn leads to the formation of fibrosis.
2. Betel nuts release tannins and catenins which decreases phagocytosis.

Clinical features of OSMF

Trismus is the most common clinical feature of OSMF. Patients with OSMF have difficulty in speaking and swallowing. The mucosa becomes blanched and fibrous bands can be palpated. At times the mucosa turns red and also leads to blister formation. If the condition is not treated, the OSMF may lead to either dysplasia (Jayaraj *et al.*, 2015a; Ramasubramanian, 2013) or more insidious and grave conditions like Oral Squamous Cell Carcinoma which may develop in the mirror sites of the primary tumour. (Gupta and Ramani, 2016). In a previous study conducted where tumour progression was assessed by staining property of immunohistochemistry in myofibroblasts, two cases of OSMF stained very lightly for myofibroblasts. (Jayaraj *et al.*, 2015b). In case of severe OSMF, where trismus has progressed immensely, most of the time this indicates that the lesion has turned or is turning into OSCC. In such cases, saliva can be a good detector for OSCC (Shree *et al.*, 2019) using salivary metabolomics (Sridharan *et al.*, 2019). All the cases of dental and oral pathology should be photographed as it is the best method of clinical documentation (Hannah *et al.*, 2018). OSMF should be dealt with great caution as it undergoes molecular alterations in DNA and RNA and proteins with which it could inherit the property of a cancer cell (Sridharan *et al.*, 2017) and it can be diagnosed by various immunohistochemistry studies also (Jayaraj *et al.*, 2015c; Kumar *et al.*, 2015). The OSMF can transform into OSCC in buccal mucosa and tongue, as it is the most commonly affected site for OSCC (Thangaraj *et al.*, 2016; Viveka *et al.*, 2016).

Hallmark for OSMF diagnosis

1. Blanching of the oral mucosa. It is defined as a persistent, white, marble-like appearance of

the oral mucosa. It may be localised, diffused or reticular

2. The tough, leathery texture of the mucosa
3. Palpable whitish fibrous bands (Wollina *et al.*, 2015)

Treatment of OSMF

Conventional therapies like anti-inflammatory, oxygen radical scavenging and anti-fibrotic drugs can be administered after a scalpel biopsy or laser biopsy. Scalpel excision will lead to profuse bleeding as compared to laser excision (Jangid, 2015).

The aim of this study is to find the correlation between different age groups with habits in OSMF in order to assess the treatment outcome based on the various parameters of age, type of habits, histopathology and clinical mouth opening.

MATERIALS AND METHODS

Data was procured from patient records of 86,000 patients who visited the institution between June 2019 till March 2020. Details like age, habit and clinical findings of OSMF patients were retrieved. After getting approval from the scientific review board of Saveetha Dental College, analysis of the results were done.

Data were tabulated in Excel sheets. The data were categorized according to age, gender, habits, interincisal mouth opening and grade of OSMF. Dependent variables are age habits, interincisal mouth opening, the grade of OSMF.

Independent variables are the gender of the patient, clinical features, site of OSMF. Entire data were tabulated and statistically evaluated in IBM SPSS version 20.

RESULTS AND DISCUSSION

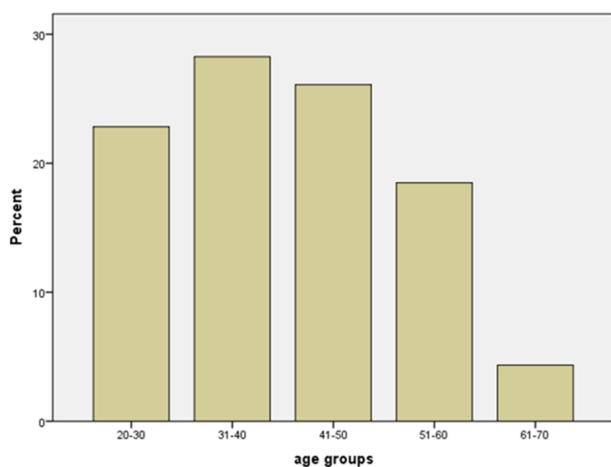
The Data for OSMF patients were tabulated in the excel sheet. Demographic data like age and sex was noted. Other variables like a habit of the patient, interincisal mouth opening and grade were tabulated.

Age of the patients varies from 21 years to 69 years. Most of the patients were between 24 to 40 years. Age 31-40 have the most number of patients (Graph 1). In the present study, there is a predominance of the male population (92.4%) and the percentage of female participants is less (7.6%). Male are more affected than females (Graph 2). Patients have the habit of Paan chewing (35.9%), followed by areca nut chewing (32.6%). Hans being the

third most popular tobacco product to be consumed (14.1%) followed by Gutkha (10.9%) (Graph 3). Interincisal mouth opening in OSMF ranges from 15mm to 55 mm. Patients mostly have grade I Oral Submucous Fibrosis, followed by grade II and grade III (Graph 4).

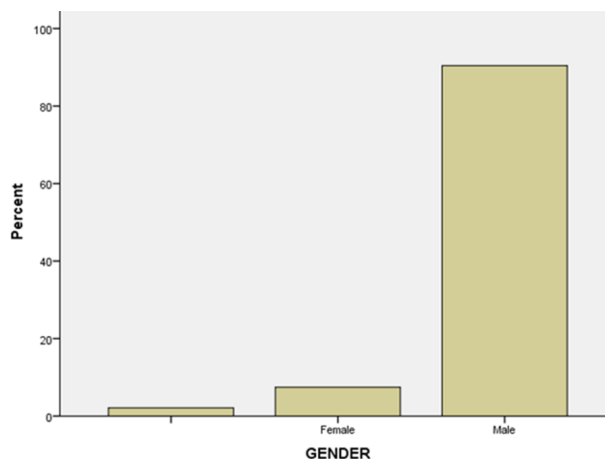
The grades of OSMF ranged from grade I till grade III. Patients having grade I OSMF were 48.9%, grade II 44.6%, grade III OSMF cases were 6.5%. Oral submucous fibrosis is a precancerous condition. Schwartz called it 'atrophic idiopathic mucosae oris' later it was named by Joshi as Oral submucous fibrosis (More, 2012). Various etiological factors have been proven in many studies. Most of them suggest areca nuts be the main causative agent for OSMF. Systemic factors have also played a role like anemia, chronic iron deficiency and genetic predisposition.

In the present study, the age group of OSMF ranges between 21 years to 69 years. It determines that OSMF is not age-specific and that it can affect any age group. Careful analysis has to be done when analysing young patients. Majority of them come with a chief complaint of trismus and clinicians are likely to consider it to be a case of impacted third molars, as mesioangular third molar impaction is common in south Indian population (Sivaramakrishnan and Ramani, 2015) and pulp stones (Swathy et al., 2015). In corresponding studies, age group of patients ranged between 10 to 50 years, out of which 52.9% of the patients ranged between 20 to 29 years age group (Hazarey et al., 2007). In the present study, most of the OSMF patients ranged from 24 to 40 years of age.

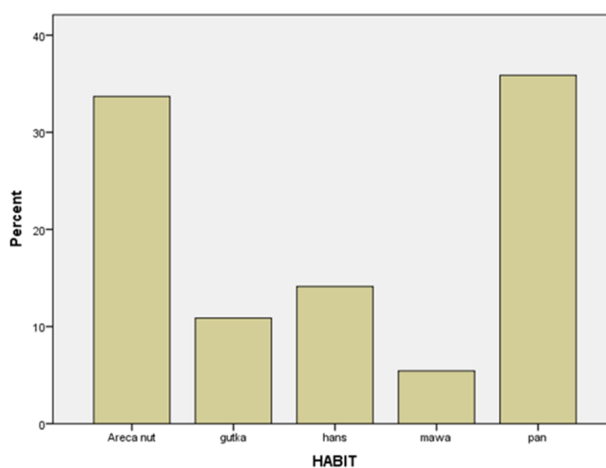


Graph 1: Bar graph depicts the various age groups of Oral Submucous Fibrosis patients.

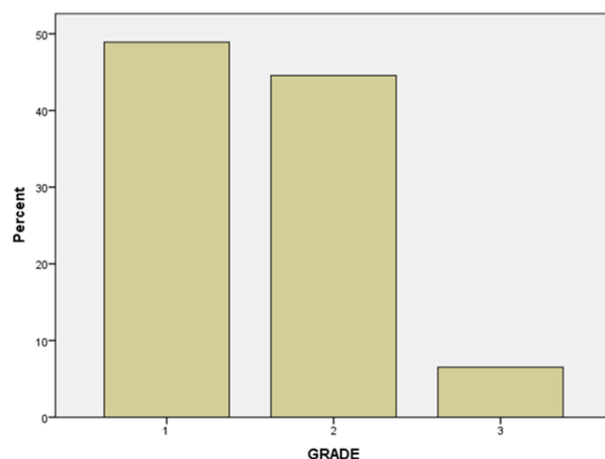
The high preponderance of OSMF in men (92.4%) was found, as compared with females (7.6%). The same is reported in the majority of studies. The reason behind the discrepancy is due to the



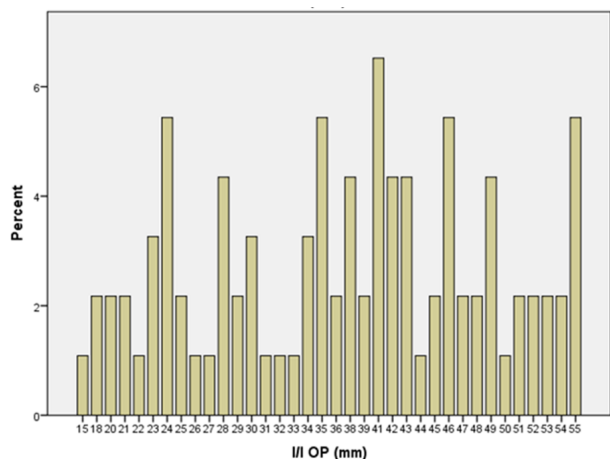
Graph 2: Bar graph depicts gender distribution of Oral Submucous Fibrosis patients.



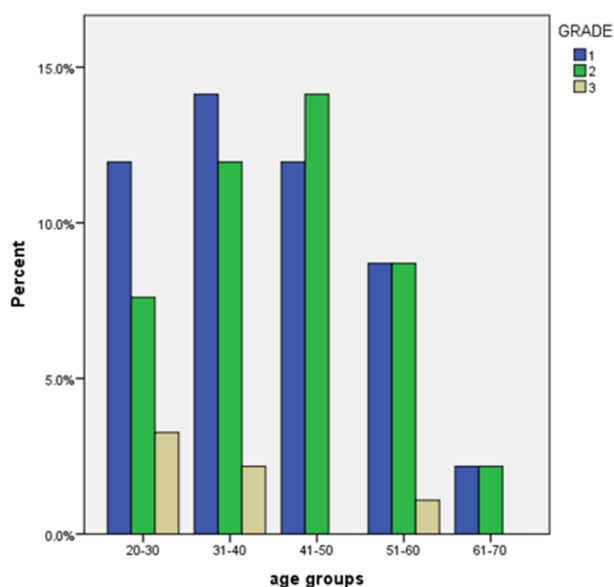
Graph 3: The percentage of Oral Submucous Fibrosis patients having tobacco consumption habits.



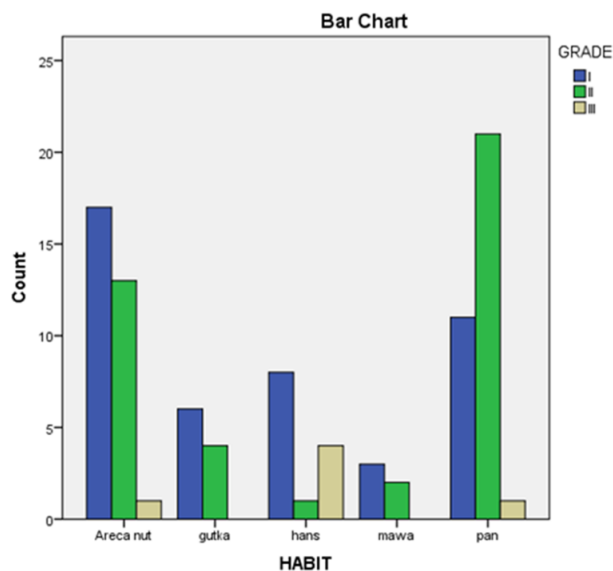
Graph 4: Bar graph depicts the grade of Oral Submucous Fibrosis in patients.



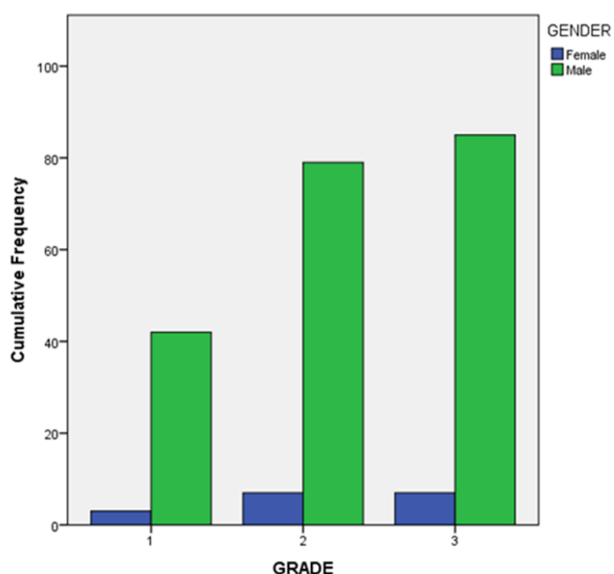
Graph 5: Bar graph depicts the various Interincisal mouth opening of Oral Submucous Fibrosis patients.



Graph 7: Association between age and grade of Oral Submucous Fibrosis.



Graph 6: Association between tobacco consumption habits with grades of Oral Submucous Fibrosis.



Graph 8: Association of grades of Oral Submucous Fibrosis in male and female.

high consumption of tobacco products among men rather than females. Iron deficiency, along with tobacco consumption habits, may predispose OSMF in females. In the present study, almost everyone had a tobacco-chewing habit like Paan chewing, Gutkha chewing, Mawa consumption, Hans consumption, and Areca nut chewing. In the present study, the most prevalent habit amongst patients was paan chewing (33.5%), followed by areca nut chewing (32.6%). Previous literature has claimed that patients having areca nut chewing habits are 57.34% in males and 5.29 % in females (Hazarey et al., 2007). The reason behind the consumption of paan could be due to the easy availability of tobacco and tobacco-related products along with exemption from social stigma related to tobacco consumption. The interincisal mouth opening is mostly 51

mm in males and 46.3 mm in females (Nagi, 2017) due to trismus in OSMF patients, and there is a reduced mouth opening. In our present study, interincisal mouth opening ranged between 15 to 55 mm. Majority of patients had their mouth opening as 24 to 55 mm. In a previous study, OSMF patients were divided into four groups. Patients showed more prevalence in stage II (46.7%), followed by stage III (34.6%). Current study results depict the patients showing more propensity towards grades between I (48.9%), II (44.6%) and grade III (6.5%) (Srivastava, 2019). The discrepancy in the results of both the studies could be because of the difference

between the rate of consumption of tobacco products and the time duration of keeping the tobacco/areca quid into their mouths. Mouth opening ranges from 39 to 55 mm, grade I Oral Submucous Fibrosis is prevalent Graph 5. Association between the variables was made using Chi-square test and which is represented in Graph 6, Graph 7 and Graph 8. Association between age groups and grades of OSMF was found to be statistically not significant (p -value = 0.467). Association between gender and grade of OSMF was found to be statistically not significant (p -value = 0.667). Association between habit and grade of OSMF was found to be statistically significant (p -value = 0.03).

CONCLUSION

The study conducted was an attempt to find a relation between age and habit correlation with different stages of OSMF. Patients between 24 to 40 years of age had more preponderance towards OSMF. Male generally was more affected than females. Consumption of paan chewing (35.9%) was prevalent than any other tobacco products. Interincisal mouth opening was between 15 to 55 mm. Most patients had their mouth opening between 24 to 55 mm, which makes the OSMF grade between grade I and II. In conclusion, OSMF is caused by consumption of tobacco and other products which leads to grave consequences like a limited mouth opening and if untreated then it may turn into OSCC and hence requires diligent treatment planning and follow-up.

ACKNOWLEDGEMENT

The authors would like to acknowledge the help and support rendered by the Department of Oral and Maxillofacial Pathology and Microbiology and Information Technology of Saveetha Dental College and Hospitals and the Management for their constant assistance with the research.

Funding Support

The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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