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Prevalence of Oral Submucous Fibrosis in Relation to The Chewing Habits in Karachi, Pakistan.

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Abstract: The addiction of chewing of betel quid (paan), areca nut (chaliya), unburned tobacco, gutka, niswar and manpuri is relatively high in the South Asian countries like Pakistan, India, Sri Lanka, Taiwan, China, Indonesia and Malaysia. To observe the prevalence of Oral Submucous Fibrosis (OSF), 200 OSF patients from tertiary care hospitals of Karachi were selected and informed consent was obtained. Patients were interviewed for their age, gender, and quantity and frequency of chewing habits using a structured questionnaire. The age group of patients between ages 26 years to 35years was found to be more prone to OSF as compared to other groups. The disease was more prevalent in males (81.6%) as compared to the females (18.4%). The minimum age recorded was to be as low as 15 years in manpuri addicts and as high as 66 years in betel quid (pan) with areca nut (chaliya) addicts. The percentages of habitual chewers eating betel quid (paan) (52%), areca nut (chaliya) (81.5%), unburned tobacco (19%), gutka (49%), niswar (7%) and manpuri (33%) were recorded. The study concluded that the above chewing habits can cause OSF which transmute into Oral Squamous Cell Carcinoma (OSCC) by undeniable genetic alterations. Therefore, extensive restrictions should be implemented by the government on the manufacturing, selling, buying and use of carcinogenic materials like paan, gutka, chaliya, niswar, manpuri, mawa and all forms of tobacco.

Keywords: Oral Sumucous Fibrosis (OSF), Chewing habits, betel quid (*paan*), areca nut (*chaliya*), unburned tobacco, gutka, niswar, manpuri, Oral Squamous Cell Carcinoma (OSCC).

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Introduction

A pre-malignant disorder and incapacitating condition of oral mucosa is known as Oral Submucous Fibrosis (OSF). It is a widely acknowledge as a persistent subtle disease, precancerous condition, autoimmune and collagen related disorder which is derived from various factors primarily associated with betel quid chewing marked by gradual hyalinization of the lamina propria which was first coined by Schwartz in 1952 [1,2]. Characteristic features include inflammation of juxtaepithelial type and fibrosis progressing to lamina propria that leads to oral mucosa stiffening which eventually causes trismus [3, 4, and 5]. Etiological factors of OSF are autoimmunity, vitamin B, C, and iron deficiencies, betel nut chewing, utilization of spicy foods, human papilloma virus (HPV) infection, and genetic mutations [6-10]. Betel nut chewing as shown in figure no. 1 is considered as one of the most important menace behind the development

of OSF according to the epidemiological studies [11]. In China, one study declared that 62.3% of OSF patients were found to be addicted to betel nut chewing [12]. Some studies revealed that the tradition of chewing and smoking tobacco along with alcohol boost the possibility of developing OSF [10,13].

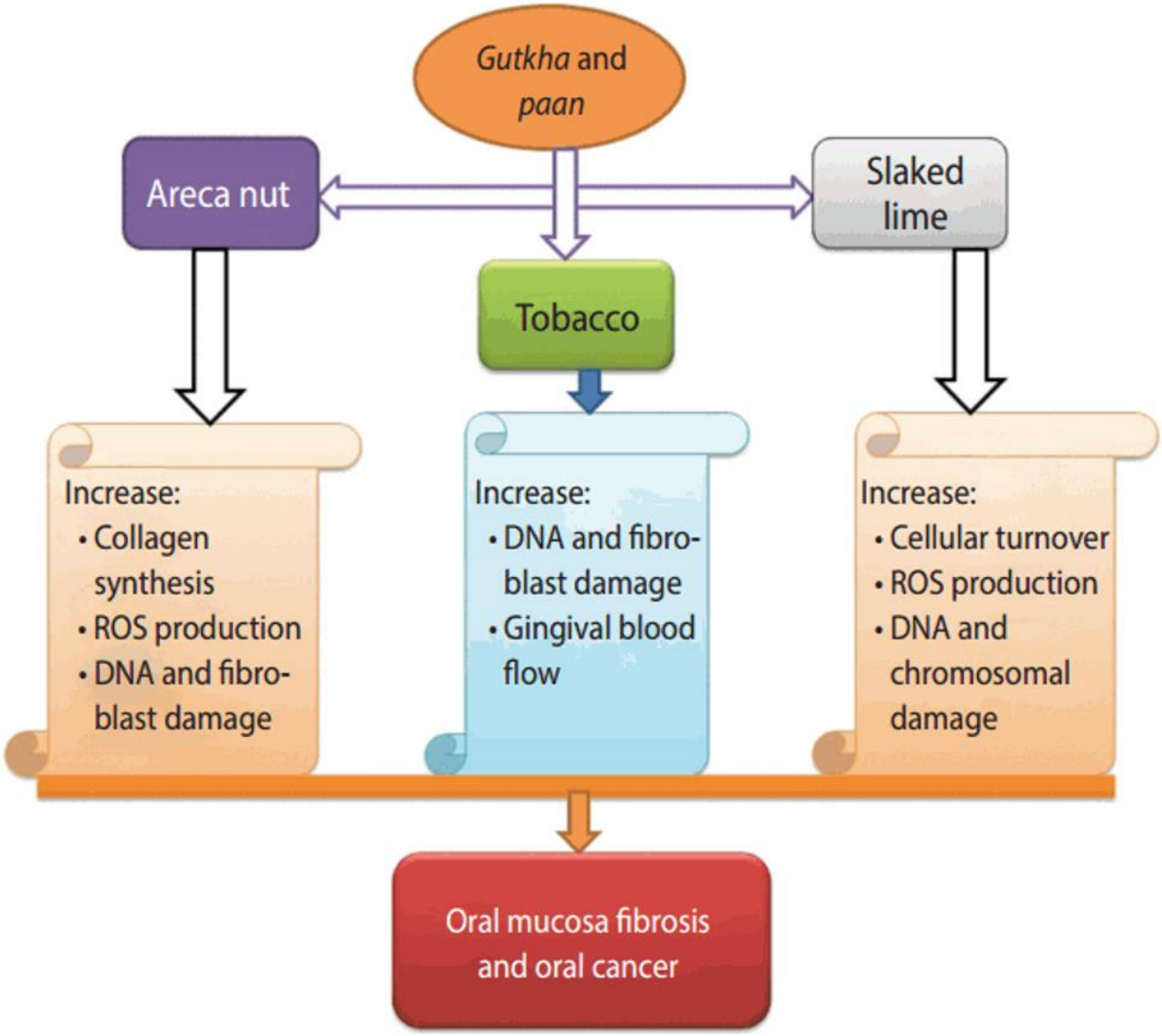

Figure 1: Causative Agents of OSF

One research reported that plethora of betel quid eaters were also addicted to smoking tobacco (86%) or drinking alcohol(74%) showing the synergistic impact of both [14]. Few other studies also affirmed that combination of drinking alcohol and chewing betel nut substantially raises a cumulative effect on OSF induction [14-16] (Liu et al, 2015) (Haider et al, 2000) (Lee et al, 2003). Essential causative substance which causes this disorder is mostly recognized as arecoline present in areca nut. The arecanut contains definite carcinogens, promoting oral carcinogenesis. These dry substances like pan masala and gutka show high concentration of areca nut, appearing to be causative agent of the disease [17, 18]. (Shende et al, 2013) (Kiran et al, 2013). These chewable products are commercially prepared and easily available as shown in fig 2.

Figure no. 2: Available chewing market products

Oral Squamous Cell Carcinoma OSCC and OSF are more prevalent in areas where chewing of betel nut is a common habit. OSF is a well-recognized, potentially malignant disorder especially affecting the South- Asian countries. It was formerly circumscribed to the Indian subcontinent, but it is now often seen in Asian populations of the United Kingdom, USA and other developed countries, and is therefore a serious health problem. What makes it more omnious is the malignant transformation rate, which has been reported to be around 7.6% over a 17-year period[10]. (Arakeri et al, 2017). Therefore, this study was conducted to determine the prevalence of OSF in relation to the different chewing habits.

Method:

The subjects used in this research included the Oral Submucous Fibrosis patients. The OSF patients were characterised clinically having fibrous bands in the buccally and/or labially, ulceration, shrunken uvula, trismus (restriction in mouth opening), burning mouth sensation, dysphagia, pain associated with eating spicy food, depigmentation of the oral mucosa, blanching of the oral mucosa, leathery mucosa on palpation, sunken cheek and xerostomia. 200 OSF patients were selected and interviewed among the patients coming to the OPDs of the Tertiary care hospitals in Karachi for the study followed by the informed consent having regular chewing habit of betel quid (*paan*), areca nut (*chaliya*), unburned tobacco, gutka, niswar and manpuri. The complete history of the patient in the form of questionnaire was obtained including demographic data, current and past history of habits (Betel Quid (Pan), Areca nut (Chalia/Supari), Tobacco, Niswar, Gutka, Mava, Manpuri). Since the research involved the use of human subjects therefore all the procedures were approved by the regulations of institutional ethical committees of concerned institutes. Patient were given the assurance that their information will be highly confidential and will only be used in the research project for the betterment of humanity and saving people from the same disease they are suffering from.

Results

The percentages of habitual chewers eating betel quid (*paan*) (52%), areca nut (*chaliya*) (81.5%), unburned tobacco (19%), gutka (49%), niswar (7%) and manpuri (33%) were recorded as shown in fig 3 Since the patients were divided according to their chewing habits. This division showed the frequency of chaliya (betel nut) users were the highest (81.5%). Despite e fact that the frequency of pan and gutka users was found second highest in OSF patients.

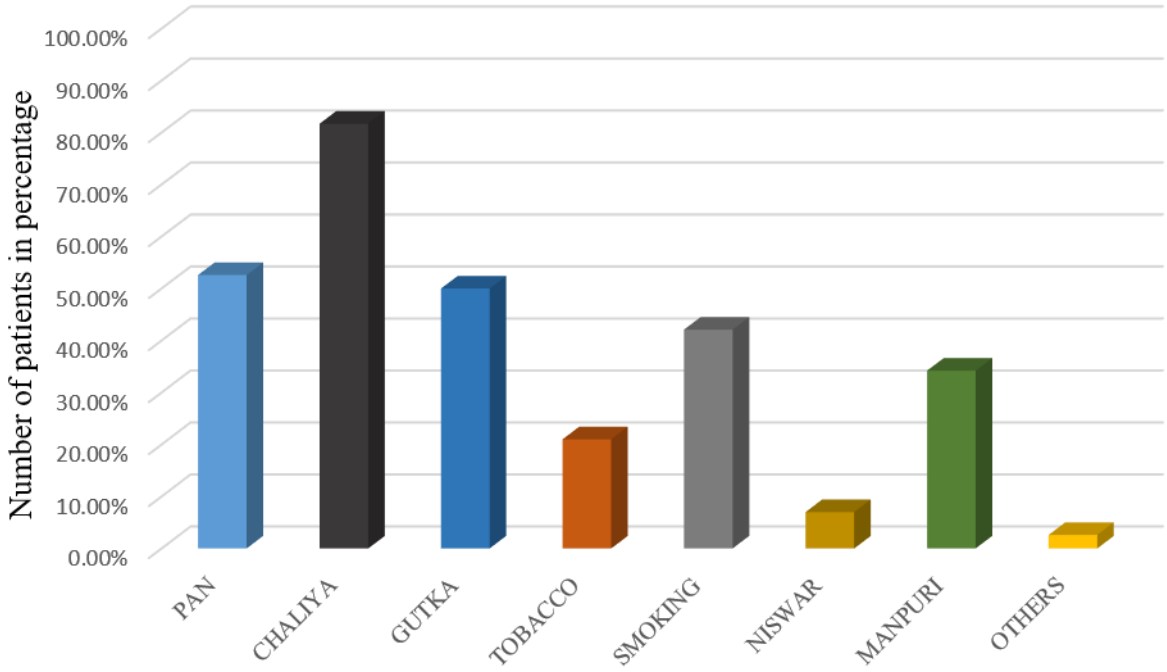

Figure 3: Distribution of OSF patients according to their chewing habits

The age of OSF patients in this study was found largely distributed between 15 years to 66 years. The age group of patients between ages 26 years to 35years was found to be more prone to OSF as compared to other groups. The minimum age recorded to be as low as 15years in manpuri addicts which is an alarming situation and as high as 66years in betel quid (pan) with areca nut (*chaliya*) addicts as shown in fig 4.

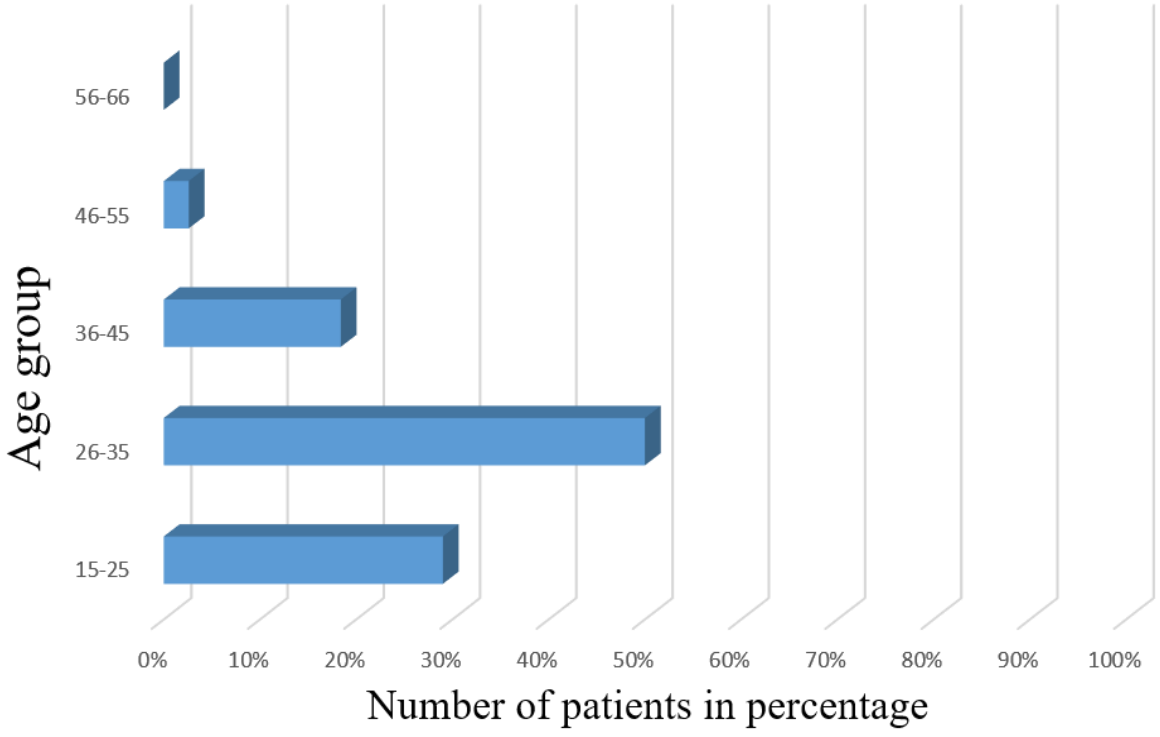

Figure 4: Age distribution among OSF patients

The OSF patients were distributed according to gender, it was observed that this disease was more prevalent in males (81.6%) as compared to the females (18.4%) the reason could be that the use of tobacco and other chewing products are more consumed by men as compared to women in Karachi as shown in fig 5

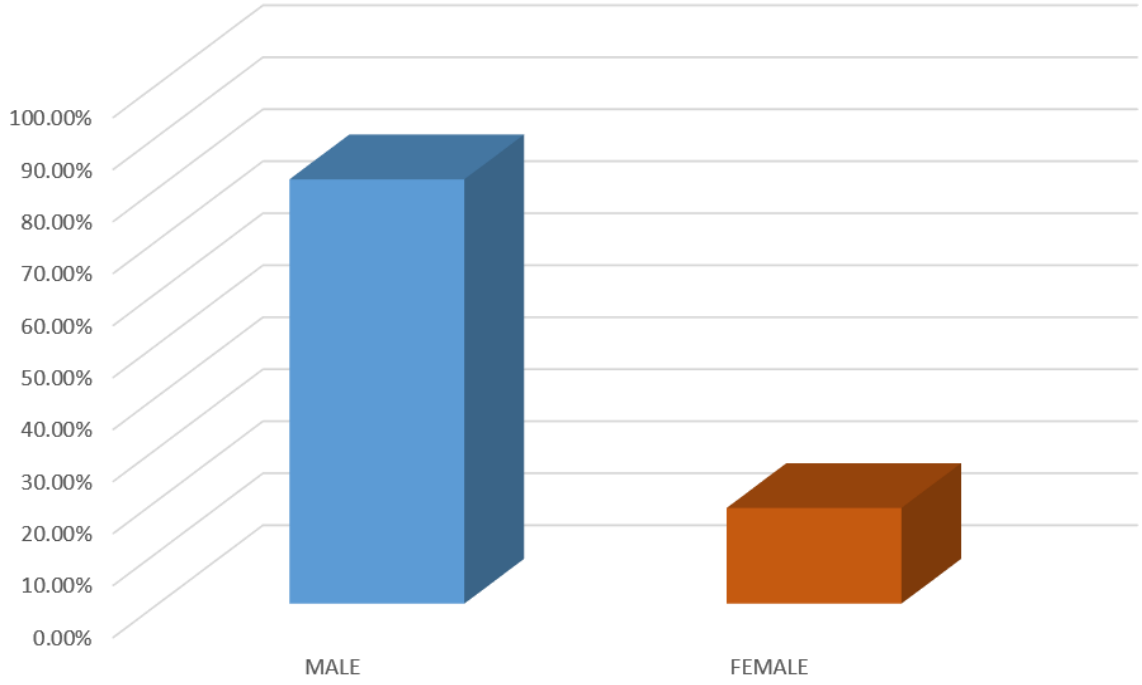

Figure 5: Gender distribution among OSF patients

Discussion

An ounce of prevention is better than a pound of cure.

Due to the lack of knowledge about the deleterious effects of pan and gutka, these products are perceived to be beneficial by the people. They consider it as a mouth refresher, germ killer, supporter of digestion, morale booster, tension reliever and mouth rinser [19]. Due to its sweet taste, Gutka is considered as a candy by the young individuals. The incorrect perception of Gutka as a mouth refresher leads to the aggregation of microbes in the oral cavity due to its sweetness. The use of these cancer causing chewable products have become a major challenge to the countries as they are unable to control its spread [20]. The pathogenesis of OSMF is compound as it may occur due to nutritional deficiencies; the consumption of smokeless areca nuts, chilies, and lime; genetic abnormalities; betel quid; tobacco smoking; herpes simplex virus; human papilloma virus (HPV); chronic candidiasis; and immunological depression [21]. One research study highlighted Pakistan as a second conspicuous country after India where these carcinogenic products are consumed at a higher rate, with a ubiquity among Pakistani men and women of 21.3 and 19.3%, respectively. The addiction of tobacco product triggering cancer has been reported in more than 90% of cancer cases [22]. Oral submucous fibrosis patients manifest a remarkably greater risk of malignant transformation than those without OSF [23]. The prevention of cancer is a paramount task and is highly effective due to its least cost. Prior discernment can lead to the interruption of the disease at the beginning and its further progression to attain the possible recovery. Nevertheless, for a low income sector the application of medical genetics creates inequity to acquire innovations and health care systems should be responsible enough to construct a condemnatory and bureaucratic perception among aal the population and to ameliorate their standard of living. The knowledge regarding oral cancer biomarker analysis would create a better

understanding in knowing the Oral potentially malignant disorders OPMDs turning invasive [24-26]. In conclusion, there is a serious need of creating awareness among the addicts about the beneficial myths they believe of these carcinogenic products. Extensive restriction should be implemented by the government on the manufacturing, selling, buying and use of carcinogenic materials like *paan, gutka, chalia, niswar, manpuri, mawa* and all forms of tobacco and strict action should be taken on the use of these carcinogenic chewable product to save the people from painful and mutilating surgeries.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. The study on humans was conducted in accordance with the ethical rules of the Helsinki Declaration and Good Clinical Practice.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

None.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

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