DEMENOPHRAGIC PROFILE OF ORAL SQUAMOUS CELL CARCINOMA PATIENTS IN BANGALORE.

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ABSTRACT

INTRODUCTION: Oral cancer is one of the leading cancers in the world. However, In India, it is one of the most common cancer and constitutes a major public health problem. OBJECTIVES: The aim of the study is to identify incidence rates of oral squamous cell carcinoma (OSCC) at specific anatomic sites, age, gender and habits groups in the West Bangalore population. MATERIALS AND METHODS: 85 cases from January 2011 to November 2015 of OSCC was retrospectively analysed from Dept of Oral & Maxillofacial Pathology, Rajarajeswari Dental College and Hospital, Bangalore. They were analysed using chi-square statistics. RESULTS: The study revealed a male to female ratio of 1.6: 1 with largest number of OSCCS developing in the fourth & fifth decade of life. Overall, the most common site was buccal mucosa(55.29%), followed by tongue(20%), lip(7%), gum(5.88%), retromolararea(3.52%),maxilla(3.52%), mandible(3.52%), floor of the mouth (1.17%). The higher incidence habit causing OSCC was smokeless tobacco in males than females. Contingency coefficient based on chi-square statistics was calculated to find the degree of association between the two variables i.e. gender to buccal mucosa & gender to smokeless & smoking tobacco habits, which were found to be positively with respect to age. CONCLUSION: Our study shows greater incidence of OSSCs in buccal mucosa, which
contradict previous studies was tongue. Further studies are required to show with regards to site.

**KEYWORDS**: Epidemiology, Oral squamous cell carcinoma, clinical data.

**INTRODUCTION**

Oral squamous cell carcinoma(OSCC) is the most common malignant neoplasm of the oral cavity and represents about 90% of all oral malignancies. Oral squamous cell carcinoma(OSCC) is an important cause of morbidity and mortality worldwide with an incidence rate that varies widely by geographic location.\(^1\) Oral and oropharyngeal carcinomas are the sixth most common cancer in the world. Oral cancers have a significant impact on the patient’s quality of life, because of the functional loss that results with the treatment modalities even with the highest care rendered nowadays.\(^2\) In India, oral cancer represents major health problem constituting up to 40% of all cancers and is the most prevalent cancer in males and the third most prevalent in females. Even within one geographic location, the incidence varies among groups categorized by age, sex or race. Recent publications have highlighted variations in oral cancer trends by geographic location, anatomic site, race, age and sex.\(^1\)

**EPIDEMIOLOGY AND ETIOLOGY**

Cancer, which is defined as abnormal growth of cell, can affect any tissue or organ of body\(^3\). Despite several diagnostic and therapeutic advances, the overall incidence and mortality associated with OSCC are rising, with current estimates of age-standardized incidence and mortality being 6.6/100,000 and 3.1/100,000 in men and 1.4/100,000 in women, respectively.\(^1\) In United States, oral cancer represents approximately 13% of all cancers thereby translating into 30,000 new cases every year. smokeless tobacco use has been implicated for the etiology of the oral cancerous lesions. In the South Asian region over one-third of tobacco consumed in smokeless.\(^3\)

Oral cancers have a multifaceted etiology. A plethora of lifestyle and environmental factors has been identified as the risk factors for oral cancers.\(^2\) The risk factors include tobacco associated intra-oral carcinogens, which play a synergistic role in oral tumorigenesis. From relative risk factors of alcohol and tobacco, it has been estimated, that 75% of all oral cancers can be prevented. In the remaining 25% of the patients who are not exposed to these substances, the cause/s of their tumours remains unknown. Disproportionately higher
incidence of carcinoma of the head-neck in relation to other malignancies in India, may be due to use of tobacco in various forms, consumption of alcohol, low socioeconomic condition related to poor hygiene, poor diet and rampant viral infections.\textsuperscript{[4]}

The descriptive oral cancer data for each specific geographic area are important for many reasons, including understanding the extent of the problem, determining which groups within the population are at highest and lowest risk, and relating the burden of other cancers to evaluate the allocation of resources for research, prevention, treatment and support services.\textsuperscript{[1]}

Though many studies have been carried out in the different parts of the world reported on the incidence and pattern of OSSC\textsuperscript{[1]}, only few studies have been carried out in the central India, with this background the present study was carried out to find the incidence rates at specific anatomic site, within specific age, gender and habit groups in West Bangalore population and also to compare tendency with reports from other studies in which figures were made specifically on OSCC.

MATERIALS AND METHODS
Histologically verified 85 cases of OSCCs in the period from January 2011 to November 2015 was retrospectively analysed from Dept of Oral & Maxillofacial Pathology, Rajarajeswari Dental College and Hospital, Bangalore. The anatomic sites included in the study were- Buccal mucosa, Tongue, Lip, Gum, Retromolar area, Mandible, Maxilla and Floor of Mouth. Charts were made listing the age, sex, site and habits of eighty five OSCC patients. A comprehensive analysis was done on the data collected by using chi-square statistics and results were formulated.

RESULTS
Of the 85 patients, men represented higher proportion(58.82%) of OSCCs than women(41.17%).large number of cases were seen to develop in the fourth to fifth decades of life. Overall buccal mucosa(55.29%) was the most common site involved followed by tongue, lip, gum, maxilla, mandible and the least involved was floor of the mouth (1.17%).The study also revealed the larger number of smokeless tobacco habit than smoking tobacco habit. (Table 1 figures 1-3)

Statistically, Chi-Square test using contingency coefficient was calculated to find degree of association between the two variables i.e gender to buccal mucosa and gender to smokeless and smoking tobacco habits, which were found to be positively correlated with respect to the
age. All of the above said correlations were found to be statistically significant respectively; i.e. $p<0.05$ and $p<0.01$.

**TABLE 1**

<table>
<thead>
<tr>
<th>AGE (YRS)</th>
<th>M</th>
<th>F</th>
<th>BM</th>
<th>TONGUE</th>
<th>LIP</th>
<th>GU</th>
<th>M</th>
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- Gender with respect to age
DISCUSSION

The incidence of OSCC seems to be increasing and is a global health problem with increasing incidence and mortality rates; around 300,000 patients are annually estimated to have oral cancer worldwide. OSCC shows geographical variations with respect to the age, site, sex and habits of the population.\textsuperscript{[1,10]} The present study revealed a male to female ratio of 1.6:1 with largest number of OSSCs developing in the fourth and fifth decade of life. This is consistent with an earlier report by Sharma et al and co-workers confirming that oral cancer in northern India was a disease of middle aged men. Study done by Sharma et al, the buccal mucosa, retromolar pad were frequently involved sites, while palate was least involved.\textsuperscript{[1]}

In the present study buccal mucosa(55.29\%) was the most common site involved followed by tongue, lip, gum, maxilla, mandible and the least involved was floor of the mouth
1.17%). The study also revealed the larger number of smokeless tobacco habit than smoking tobacco habit.

Study done by Shenoi, et al showed mandibular alveolus was the most frequent site because most of the patients tend to keep the tobacco in the form of quid in the buccal sulcus with close proximity to alvelolus. This in turn led to constant irritation with chemical and physical insult of gingiva. Study done by Sanghvi et al showed that the risk ratio for oral cancers were four-fold in chewers, two-fold in smokers. Study done by Warnakuasuriya in his paper opined that other than major risk factors like tobacco, alcohol, and betel quid, several emerging risk factors namely heredity and familial risk, marijuana(cannabis) smoking, khat chewing, medicinal nicotine use. HIV infection and alcohol containing mouthwashes are likely to be associated with oral cancer. In the present study however, these factors were not analyzed as the patients whose records were checked, were mostly from the lower socioeconomic status where oral hygiene is not maintained properly or the fact that these patients use tobacco products as a dentrifices.

Study done by Khandekar, et al showed majority of carcinoma alveolus may be correlated with the tobacco chewing habit. Smokeless “spit” tobacco contains over 2000 chemicals, 5 many have been directly related to causing cancer wrapped inside betel leaf commonly called as khaini which has been chewed for centuries in India. Study done by Luciana S, et al series of OSCC cases showed important trends in the Sao Paulo city. Whites adults were affected, aged from 41 to 60 years, had the highest frequency males were more affected than females. A significant increase in the rate of individuals 80 years old or older was observed. Gingival was commonly affected due to poor oral hygiene. Similar study done by Liu et al showed to check the incidence by sex, race/ethnicity and anatomical subsite in Southern California showed non-Hispanic(NH)black men have the highest overall incidence rate for OSSC, NH whites an NH blacks have similar incidence patterns by subsite, but male to female ratio is higher among NH blacks. The Asian ethnic groups display dramatic variations in terms of the subsite-specific incidence rates And M:F rate ratios. The findings revealed the heterogeneity and complexity of oral cancer by anatomical location and the importance of cultural habits and behavioural factors in the development of oral cancer.

These regional differences may be attributed to the exclusive use of chewing tobacco in the Indian subcontinent compared to smoking in the west. SCC of buccal mucosa is one the most common cancers along a geographical belt extending from central to South East Asia because
of the practice of chewing “pan”, a combination of tobacco,nut and lime. In contrast, the lateral tongue and floor of mouth are the more commonly involved sites in the west. The anterior two-thirds of the tongue is commonly involved in India, while the posterior lateral border and ventral surfaces are involved in the United States.

OSCC was thought to be a disease of elderly. Recent studies conducted in United States, South East of England, Spain and Scandinavia have shown that the incidences of oral cancer are increasingly being reported in the young (<40 years of age) also, particularly younger male patients. The present study showed increasing number of OSCC cases being recorded in fourth to fifth decades of life. This may be related to the habits like tobacco and alcohol.

Men represented a higher proportion of OSCCs than women simulating the trends in many recent publications. Some studies shows opposite trend with the increased incidence among women, which may be due to the changing social habits in high socioeconomic groups or cultural habits of some rural areas of India. Interestingly, 3.52% of the patients were not associated with any habits like tobacco smoking or chewing in our study which may be attributed to other etiological factors of OSCCs like certain viruses(such as Human papilloma virus), low consumption of fruits and vegetables, genetic predisposition, etc.

“Pan” chewing or Gutkha chewing were the most prevalent habits recorded in our studies, the incidence being highest at mucosal sites with prolonged contact with carcinogens. Smokeless tobacco is thought to induce cancer in regions where it is held in direct contact, such as the cheek or gum. The demographic profile of Indian oral cancers shows significant differences from oral cancer in several developed countries of world, including Brazil, USA, UK, France, Africa and Japan, where it is associated with or without alcohol consumption.

Oral SCC arises from within a field of precancerized epithelium either from a pre-existing potentially malignant lesion, or de novo. The use of tobacco and betel quid, heavy drinking of alcoholic beverages and the major risk factors for Oral SCC. The 5-year survival rate is poor at about 50%, mainly because about two-thirds of persons with oral SCC already have large lesions at the time of diagnosis.[8]

Early diagnosis remains the key element for the sufficient therapy of OSCC, clinicians should be aware that single ulcers, tumors, red or white plaques, particularly if any of these are persisting for more than two weeks, may be manifestations of malignancy. In such cases biopsy from the suspicious lesion is needed. Finally, new emerging technologies are
developing and targeting to early diagnosis of OSCC through molecular analysis of cytologic smears or saliva samples.[9]

CONCLUSION
As useful clinical information on the demographic profile of OSCCs among West Bangalore population is limited, this retrospective study was undertaken to present a comprehensive data on the tendency of OSCC in West Bangalore population. Different levels of tobacco and alcohol exposure, diet, socioeconomic circumstances, age, gender and sites are the causative factors in the differences seen in the incidence rates of OSCC in various populations globally. Our study shows greater incidence of OSSCs in buccal mucosa, which contradict previous studies was tongue. Further studies are required to show with regards to site.

REFERENCES