

ORAL SQUAMOUS CELL CARCINOMA (OSCC) IN KARACHI CITY — A RETROSPECTIVE STUDY

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ABSTRACT

Oral squamous cell carcinoma (OSCC) is the most commonly occurring malignant tumor in South East Asian region. It is a major cause of morbidity and mortality. This study was undertaken to assess the frequency of OSCC, gender, age distribution and anatomical site according to ICD-10 (International Statistical Classification of Disease and Related Health Problems, 10 Revision, ICD-10). The survey was undertaken at the Oral Surgery outpatient clinic of Hamdard University Dental Hospital, Karachi. Our sample size is comprised of 80 patients with histologically proven cases of OSCC of both genders were included in this study. In present study, most predominant site of occurrence of OSCC was buccal mucosa 34(50%) nevertheless least cases were found affected at floor of the mouth 1(1.5%). Of the total sample size maximum number of cases were reported between the age group of 31-60 years, 53(77.9%) and showed higher predilection towards male gender. However the OSCC of the hard palate and upper alveolar mucosa were specifically found more in female. Almost all of these patients gave a positive history of betal chewing. This has now become major public health problem, and awareness to the masses is necessary to control the rising rate of oral malignant disease in the country.

Key Words: *Betal Nut, Gutka, Cancer, Oral cancer, Pakistan, Karachi.*

INTRODUCTION

According to World Health Organization (WHO) oral squamous cell carcinoma (OSCC) is the eighth most commonly occurring cancer around the globe and presents a challenging situation for developing countries.¹ More than 90% cases arise from oral epithelium while 10% cases consist of melanoma, malignant salivary gland tumors, lymphoma and odontogenic tumors of the jaw. There is regional variation in trends of oral cancer around the globe, depending on the etiology and the risk factors involved.^{2,3}

Pakistan is considered to be the 7th most populous country in the world for the most cases of oral malignancies.⁴ In Karachi alone the consumption of pan/gutka has augmented to the level of leading cause of oral cancer.⁴ The malignant tumors of oral cavity are classified by World Health organization (WHO), ICD-10 (International Statistical Classification of Disease and Health Related Problems, 10th Revision, 2016). This classification has been used for cancer registries for coding the site (Topography) and the histology (Morphology) of the neoplasm.⁵

Considering the mortal nature of this disease, the impressive advancement in recent years has taken place with respect to the detection, prevention and management of oral cancer. The OSCC survival rate is highly dependent on the stage of tumor diagnosis.⁶ It may affect any gender and age group depending upon the amount of tobacco and betal consumption which has been observed to be more prevalent in low socioeconomic group particularly in developing nations. Currently, an upward trend is being observed in the occurrence of oral cancer in the younger population due to pertinent habits such as, smoking, chewing gutka/pan and alcohol usage.⁷ Epidemiological studies have

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shown a male preponderance of OSCC with female with a ratio of 2:1.⁸

The etiology of OSCC is multifactorial. The prime factors are: chewing of areca nut and tobacco intake in various forms, alcohol abuse. Other contributing factors that may aggravate the problem includes nutritional deficiencies, environmental causes, chronic trauma, exposure to radiation and viruses particularly human papilloma Virus (HPV) especially subsets of HPV 16 and 18. Several other conditions are also found to be associated with increased risk of developing oral cancer such as oral submucous fibrosis (OSF) and oral lichen planus. Recent advancement has also shown the role of oncogenes in the etiopathogenesis of head and neck cancer.^{9,1} The aim of this study is to investigate the frequency of OSCC according to gender and age, and anatomical site. The anatomical sites were categorized according to ICD-10.

METHODOLOGY

This is a retrospective study and was conducted between July 2011 and June, 2015 at Hamdard College of Medicine & Dentistry, Hamdard University Dental Hospital, Karachi. Ethical approval of the study was sought from Hamdard University, Ethical Board Review Committee. Patients attending the Oral and Maxillofacial Surgery department who were clinically and histologically diagnosed with OSCC were randomly included in this study. Informed consent was obtained from all patients. The personal history which included age, sex, occupation, education level, medical history and pan/gutka chewing habits was taken by interviewing and recorded in a form. A thorough oral examination of the cancer site was done; a specimen of the lesion was taken by incisional biopsy and was transferred to a biopsy bottle with labeled name of patient containing 10% neutral formalin and sent to pathology lab for histopathological examination. The age of patients were classified into three broad groups 20-40, 41-60 and 61-80. The exclusion criteria include those who had salivary glands carcinomas and those who refused to give consent for this study. Eighty study subjects presenting with the compatible picture of OSCC were included in the current study. The data was coded using ICD-10 (International Statistical Classification of Disease and Related Health Problems. 10 Revision, 2016). This classification has been used from many years for cancer registries for coding the site (Topography) and the histology (Morphology) of the neoplasm. These ICD-10 codes designated to the topographical site are C02.0 (Dorsal surface of tongue), C03.0 (upper gums/ alveolar mucosa), C03.1 (lower gums/ alveolar mucosa), C04 (floor of mouth), C00.4 (Inner aspect of mucosa of lower lip), C05.0 (hard palate) and C06.0

(buccal mucosa). Descriptive statistics and Chi-square were used to calculate the frequency of OSCC related to gender and age.

RESULTS

A total number of 80 histologically proven cases of oral squamous cell carcinoma were included in this study which was referred from different areas of Karachi city. The male to female ratio was 2:1 with an overall mean age 46.4 and SD±16.76 years. Our study finding showed higher predilection of OSCC in males 48(71%) as compared to females 20(29%) as shown in Table 1.

The site of oral squamous cell carcinoma has been classified according to (International Statistical Classification of Disease and Related Health Problems. 10 Revision, ICD-10) which is endorsed by the World Health Organization (WHO). In our study, we encountered maximum number of OSCC in the region of buccal mucosa 34(50%) belonging to ICD-10 category (C06.0) followed by (C03.1) lower alveolar mucosa 15(22.1%) and the least common site of appearance was the floor

TABLE 1: DISTRIBUTION OF OSCC CASES ACCORDING TO GENDER

Gender	n	%
Male	48	71
Female	20	29
Total	68	100

TABLE 2: DISTRIBUTION OF OSCC ACCORDING TO SITES

ICD-10 Codes	Site	n (%)
C02.0	Dorsal surface of tongue	5(7.4%)
C03.0	Upper alveolar mucosa/gums	3(4.4%)
C03.1	Lower alveolar mucosa/gums	15(22.1%)
C04	Floor of the mouth	1(1.5%)
C00.4	Lower lip	2(2.9%)
C05.0	Hard palate	8(11.8%)
C06.0	Buccal mucosa	34(50.0%)
Total		68(100%)

TABLE 3: DISTRIBUTION OF CASES ACCORDING TO AGE GROUP

Age group	N	%
10-30	5	7.4
31-60	53	77.9
61-90	10	14.7
Total	68	100.0

TABLE 4: CROSS-TABULATION SHOWING DISTRIBUTION OF OSCC ACCORDING TO ICD-10 CATEGORIES WITH RESPECT TO GENDER, AGE GROUP AND SITE

Age group	Gender	Site						Total	
		Dorsal surface of tongue C02.0	Lower lip C00.4	Hard palate C05.0	Upper alveolus C03.0	Lower alveolus C03.1	Floor of mouth C04		Buccal mucosa C06.0
10-30	Male	1	—	—	—	—	1	0	2
	Female	0	—	—	—	—	0	3	3
	Total	1	1	—	—	—	1	3	5
31-60	Male	1	—	2	0	12	—	22	38
	Female	0	1	5	3	1	—	5	15
	Total	1	2	7	3	13	—	27	53
61-90	Male	3	—	1	—	1	—	3	8
	Female	0	—	0	—	1	—	1	2
	Total	3	—	1	—	2	—	4	10

of the mouth (C04) 1(1.5%) as mentioned in Table 2. Cross tabulation of OSCC with gender and sites, particularly the buccal mucosa, lower alveolar mucosa, dorsal surface of the tongue and floor of the mouth reported male preponderance, except in hard palate and upper alveolar mucosa where female predilection was observed with a p-value of 0.012 (Table 4).

We also investigated the frequency of OSCC according to age group, which revealed that maximum number of OSCC patients was observed in 31-60 years 53 (77.9%) followed by 61-90 years 10 (14.7%). The least number of cases was seen in 5(7.4%) 10-30 years of age group. Cross tabulation with respect to site of OSCC, gender and age group demonstrated that males were more afflicted in the age group of 31-60 and 61-90 years and females were more commonly affected in the 10-30 years of group. However, the chi-square test showed the data distribution is significant only in the 31-60 age groups with a p-value of 0.002.

DISCUSSION

Oral squamous cell carcinoma is a global health problem and it is highly prevalent in South Asian countries. This may due to chewing of tobacco in various forms.^{10,11,1} Present study findings showed increased frequency of OSCC in males as compared to females. Several studies have been conducted locally and their findings are in accordance with our study.⁴ Similar trend was observed in many parts of the world. A study conducted in Brazil also showed male preponderance.² One of the research conducted in Nova Scotia that extended over a 15 year period reported 57 males 20 females cases of OSCC.¹² However, data gathered in the Scandinavian countries showed increased prevalence of tongue cancer in male population in the 20-79 year

group with numbers increasing over a seven year period whereas, females affected by the disease were fewer than men and even though the incidence increased it didn't change by much.¹³

There seems to be a link between the development of OSCC and age of the patient, as most cases in present study were predominantly found in the 31-60 year range. Previous research provides similar findings as studies done in Karachi showed prevalence in the 41-60 year range. There is consistent age relationship noticed in India at the age group of 31-50 years.^{1,14} There is a discrepancy reported in the occurrence of OSCC in young Chinese population at the age group of 22-44 years.¹⁵ Various studies conducted in Sweden, Denmark, Norway and Finland showed higher incidence of OSCC on in 40 and above ages.¹³ Our study also supports the findings of Indo-Pak subcontinent which demonstrated same age group (31-60 years). Increasing rate of consumption of gutka, niswar and betel nut has been reported in the younger age group with male predominance. Infact all studies conducted locally in Pakistan showed an increased incidence of OSCC in males.^{8,2,16,17,18,19,10} Bhurgri and colleagues showed the males affected fell in the 31-70 years age bracket whereas; the females who contracted the disease were in the 51-70 years of age group.⁴ Globally: International Agency for Research on Cancer (IARC) monograph revealed that males were more affected as compared to females in Buenos Aires, Eastern and Central Europe, UK and USA. Our study supports the previous findings as 71% of males and 29% of females has OSCC.¹¹

Baig and colleague asserted that cancer development in Asians is seen mostly in the buccal mucosa, whereas, tongue and floor of the mouth are common

sites for the occurrence of OSCC in Western populations.¹⁸ Present study supports these findings because majority of our cases had lesion on the buccal mucosa followed by lower alveolar mucosa. The least affected site was floor of mouth. The afflicted sites prove the role of unhealthy habits, such as consumption of gutka, niswar and betal quid and their placement particularly in buccal sulcus areas. This is one of the main causes of appearance of tumor in buccal region. The study of Sharma and coworkers in India showed that buccal mucosa was most commonly affected site while the palate was least.¹ However, investigation by Howell, R.E. et al concludes that the lip and tongue are the most common sites of occurrence and gum as the least common site of occurrence.¹² In western populations, the incidence of lip cancer is especially high because of their low skin melanin levels and outdoor activities.^{12,10}

An association between gender and site is also seen in our study with more males afflicted with cancer of the buccal mucosa, dorsal surface of the tongue, lower alveolar mucosa and floor of the mouth, whereas carcinomas of the hard palate and upper alveolar mucosa occur mostly in females. However, OSCC most commonly occurs on the buccal mucosa in both males and females.

LIMITATIONS & CONCLUSIONS

This study has some limitations. The sample size is small and consists of people from Karachi. It does not represent the entire population of Pakistan. However, the results of this survey are very useful since they point to habits and developments in the population.

In Pakistan, the incidence of this tumor has risen, especially, with the upswing in unhealthy social habits, such as, consumption of gutka, tobacco related products and niswar. There is a need to inform the masses about the detrimental effects of these products and to spread awareness among the general public to reverse this rising trend. A cost effective and reliable community based screening program should be instituted to reduce the burden of OSSC in the developing nations. Government strict actions are needed to limitize the availability of these prime factors from the market.

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