

# Squamous Cell Carcinoma of Oral Cavity: Changing Trends

## Research Article

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## Abstract

**Objective:** The aim of this study was to evaluate the incidence of squamous cell carcinoma in the oral cavity, its risk factors, site, and age of occurrence.

**Material and Methods:** One hundred and nine cases of squamous cell carcinoma involving the oral cavity were retrieved from the records of Regional Cancer Centre, Benghazi and were analysed.

**Results and Conclusion:** The age range was 11- 94 years with a male- female ratio 1.9- 1. The tongue (30.2 %) was the most common site of occurrence. Tobacco was found as a risk factor in male patients above 40 years old, however, no risk factors were found in other patients. Due to the changing trends of cancer pattern and associated risk factors, we emphasize the need for an exhaustive evaluation to understand the biology and the role of non conventional risk factors.

**Keywords:** Oral cancer; Etiology of oral cancer; Risk factors

**Abbreviations:** OSCC: Oral Squamous Cell Cancer; SCC: Squamous Cell Carcinoma; HPV: Human Papilloma Virus

## Clinical Implications

An increase in the reports of oral squamous cell cancer (OSCC) in younger patients with no or minimal history of traditional risk factors is of a grave concern and more research needs to be done to identify and redefine the risk factors for education, prevention and diagnosis.

## Introduction

Squamous cell carcinoma (SCC) comprises 85-90% of all malignancies involving oral cavity [1] and is prevalent in young adults ( $\leq 40$  years) and rare in paediatric subjects ( $< 20$  years) [2,3]. Recent interest to understand the demographic distribution and pattern of SCC in young adults is being performed presently with little literature on SCC in paediatric patients. The occurrence of SCC in the adult population has been mainly attributed to major risk factors, such as tobacco, alcohol, and other etiologic factors such as drugs, viral infections, exogenous factors, and poor oral hygiene [4,5]. In paediatric patients, there has also been a link to genetic syndromes. However, in young adults emphasis on other risk factors in absence of conventional risk factors has been strongly recommended [6-15]. Human papilloma virus (HPV) has been implicated in the pathogenesis of a subset of oropharyngeal squamous cell carcinoma [16]. Cancer of the oral cavity is a major public health problem with approximately 300,000 new cases reported annually worldwide [17,18]. Globally, oral cancer is the sixth most common cause of cancer-related death, although many people are unaware of its existence [19]. The incidence of oral cancer increases with age in all parts of the world and mainly occurs in the sixth and seventh decade of life, and rare in young adults [20]. In industrialized countries men are affected two to three times as often as women, largely due to their greater involvement in important risk factors, such as heavy alcohol and tobacco consumption for intra-oral cancer and sun light for lip cancer [19]. In this study we examined demographic distribution

and presence of risk factors in all squamous cell carcinoma cases involving the oral cavity diagnosed at the Regional Cancer Centre, Benghazi, Libya between 1997 and 2007. It was necessary to examine the incidence, distribution, and presence of risk factors in our population where alcohol is prohibited, and no risky behaviours such as betel nut chewing.

## Materials and Methods

Records of all patients histologically diagnosed as squamous cell carcinoma of the oral cavity between 1997 and 2007 at Regional Cancer Centre in Benghazi, Libya were retrieved and analysed for gender and age distribution, site of occurrence, and risk factors. Benghazi is the second biggest city and is situated in the eastern part of Libya. The Regional Cancer Centre serves a population of 1.5 million. All pathology cases must be reported at the Regional Cancer Centre either for treatment or for outside referrals. All patients  $\leq 40$  years of age were categorised "as young" to make the results comparable with other publications.

## Results

In this study, squamous cell carcinoma lesions comprised 55.2% of all malignancies involving the oral cavity. The remaining lesions comprised of adenoid cystic carcinoma (18.3%), mucoepidermoid carcinoma (10.1%), lymphoma (4.5%), malignant pleomorphic adenoma (4.5%), malignant melanoma (1.8%), fibrosarcoma, kaposi sarcoma, acinic cell carcinoma, and embryonic rhabdomyosarcoma. Of the 109 cases, 18 (16.5%) were young ( $\leq 40$  years). Overall male-female ratio was almost 1.9-1. The male- female ratio in patients  $\leq 40$  years was 5-1 and those above 40 years old was 1.6-1. Three cases were reported in the paediatric age group (Table 1). The tongue (66.6%) was the most common site of OSCC in the young patients. The tongue (23.0%) and buccal mucosa (23.0%) were the most common sites followed by the maxillary gingiva and alveolar mucosa (14.28%) in the patients older than 40 years (Table 2). None of the patients suffered from any chronic illness or anaemia and the general health status was found to be satisfactory. Forty two (59.1%)

of the 71 men smoked tobacco, and 5 male patients consumed alcohol. No risk factors were found in female patients. Routine investigations for HPV were not performed during this period.

**Table 1:** Age group and gender of patients.

Age Groups (years)	Male	Female	Total
11-15	1	0	1
16-20	1	1	2
21-25	0	0	0
26-30	5	0	5
31-35	3	0	3
36-40	5	2	7
41-45	4	3	7
46-50	5	4	9
51-55	12	7	19
56-60	8	6	14
61-65	10	3	13
66-70	5	4	9
71-75	4	3	7
76-80	4	2	6
81-85	2	2	4
86-90	1	1	2
91-95	1	0	1
Total (%)	71(65.1)	38(34.9)	109(100)

**Table 2:** Site and age of occurrence.

Site	<40 years	>40 years	Total
Maxillary Gingiva and Alveolar Mucosa	1	13	14
Mandibular Gingiva and Alveolar Mucosa	0	8	8
Buccal Mucosa	3	21	24
Upper Lip	0	3	3
Lower Lip	0	4	4
Palate	0	7	7
Tongue	12	21	33
Floor of the Tooth	0	8	8
Retro molar Region	2	6	8
Total	18	19	109

## Discussion

Squamous cell carcinoma mainly occurs in the sixth and seventh decade of life, and rare in young adults [20]. The primary reason for occurrence in advanced age is attributed to prolonged exposure to risk factors, mainly alcohol and tobacco [13], with tobacco smoking being the main risk factor in 41% of the cases [12]. In the absence of the main risk factors other etiologic factors such as mouth-washes, viral infections, and syndromes are being evaluated, mainly in younger population where exposure to tobacco and alcohol is less reported [5-15,20]. We felt the necessity to examine the incidence, distribution, and presence

of risk factors in the population where alcohol is prohibited by legislation and religion, and with no risky behaviours such as tobacco and betel nut chewing. In this study, the mean age of occurrence of OSCC in males was 65.4 years and in females 54.1 years with an age range of 11-94 years. Fifty-five (50.4%) of the 109 cases were reported in the sixth and seventh decade of life, which is similar to most studies reported. Other reports showed relatively low incidence (0.4-6%) [13,20] of OSCC in young adults. However, in our study the incidence was found to be 16.5%, which is in concurrence with the reports from Ibadan and Iran [15,20]. Squamous cell carcinoma in paediatric patients is extremely rare with a ratio of 1:1000 cases or an incidence of 1.1% [3-15]. Except for few case reports, there has been no extensive literature in this age group. The risk factors in a paediatric age group are mainly genetically associated syndromes [2,3]. However, in our study the three cases reported had no associated risk factors. Squamous cell carcinoma of the oral cavity is mainly a disease of men [1,5-15,20]. Our study reports male predilection in both age groups, with a ratio being higher in patient's  $\leq 40$  years. The 5-1 male female ratio reported in young patients is between the ratios 2-1 and 15-1 reported by other studies [12]. The decrease in ratio with age has been noticed in various studies. Tobacco smoked in the form of cigarettes or hookah (single or multi-stemmed water pipe) was the only risk factor found in 42 (38.5%) of the 109 patients reported. Three (20%) of the 15 male patients under 40 years and 39 (68.4%) of the 57 male patients above 40 years old smoked. None of the female patients in the either age group had risk factors. The role of tobacco is less clear in our patients, similar to studies reported in India and elsewhere [6-8,13]. The most common site of occurrence was the tongue in young patients, which was also found in other studies [1,2,4,9,10,15,16]. In our study, the tongue and the buccal mucosa were more commonly involved in patients older than 40. However, other studies reported the tongue and floor of the mouth [5,15]. In our study, maxillary gingiva was more commonly involved, which was similar to study by Adeyemi et al. [15], in contrast to mandibular gingiva as reported by other studies [1,5,12].

## Conclusion

The lack of strong association of traditional risk factors (alcohol and smoking) in our patients, the aetiology in female patients being unclear, and increasing incidence of the tongue as the primary site, we recommend studies that elucidate genetic and viral association with the disease. Our data indicated that ages between 50- 65 had a higher incidence of (OSCC) than the other age groups. Preventive measures and awareness campaigns should be arranged by the international agencies and government authorities.

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