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# Preventable Yet Prevalent: A Wake-Up Call on Oral Cancer in Pakistan

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**ABSTRACT**

This study investigated the prevalence of oral cancer risk factors, public awareness, and the impact of information in early diagnosis in Pakistan. A standardized questionnaire on demographics, habits, and disease awareness was distributed to 120 oral cancer patients from several tertiary care hospitals in a cross-sectional study. The findings indicated that guys over the age of 40 had a higher prevalence. The greatest risk factors were tobacco smoking (86.92%) and chewing of betel quid/gutka (75.21%). The majority of patients were from low-income families with minimal educational opportunities. Only 12.32% were aware of oral cancer, and over 80% believed it was not preventive or curable. Treatment was routinely postponed. The report emphasizes critically low knowledge and the vital need for public health interventions to encourage early detection and reduce illness burden.

## INTRODUCTION

Oral cancer remains one of the top ten most common cancers globally and is a leading cause of cancer-related mortality[1]. In Pakistan, it is a growing public health concern, especially due to widespread tobacco use, betel quid chewing, and poor oral hygiene[2]. Despite being largely preventable, the disease often goes undiagnosed until advanced stages due to limited awareness, lack of screening, and late medical intervention[3].

Oral squamous cell carcinoma (OSCC) is the most prevalent form of oral cancer. Major contributing factors include smoking, areca nut use, alcohol consumption, and chronic trauma from poor dental practices. Pakistan's population is particularly vulnerable due to socio-cultural norms, low health literacy, and limited access to dental care[4].

This study aims to explore the prevalence of oral cancer risk factors and the extent of public awareness across Pakistan. It emphasizes the urgent need to educate the masses to encourage early diagnosis and prevent avoidable deaths from a largely preventable disease. The stage of oral cancer depicts its severity, indicates the extend of cancer, the tendency to spread and is determined by clinical and pathological staging. TNM staging is the widely used method. The significance of staging is that it helps in decision making and provide optimal treatment regimen[7-8]. Whereas, grading of oral cancer indicates the degree to which the cancer cells resemble a normal cell and how they would respond to treatment. There is wide range of treatment depending on the site, extent, local and regional metastasis[9].

Oral cancer is an important health concern worldwide, and according to the World Health Organization (WHO), there will be an increase in the incidence of oral cancer significantly in the coming decades. The increasing trend in oral cancer cases is a cause for concern, and there should be an understanding of the etiology and contributing risk factors of this disease[10]. It is important to note that risk factors play a major role in developing a specific type of oral cancer. Therefore, it is crucial to avoid these risk factors to prevent the development of oral cancer[11].

Since people are unaware of the worst effects of contributing risk factors of the disease and reported late with advanced stage in which prognosis of cancer is less, hence the urgent need for more research and resources to combat this deadly disease is utmost important[12]

**Methodology**

This multicenter cross-sectional study was conducted between July and December 2022 in tertiary care hospitals located in different regions of Pakistan. A total of 120 patients diagnosed with oral squamous cell carcinoma were selected through non-probability consecutive sampling. Inclusion criteria consisted of patients aged 18 years or above who had received histopathological confirmation of oral cancer. A structured questionnaire gathered information on demographics, socioeconomic status, education, lifestyle habits (tobacco, betel quid, alcohol), oral hygiene, and awareness of oral cancer. Ethical approval was secured from the respective institutional review boards.

Data analysis was conducted using SPSS, with descriptive statistics and chi-square tests applied to assess associations between risk factors, awareness levels, and demographic variables.

**Results**

**Demographics:** Among the 120 patients, 69% were male and 31% female. A significant 80% were over the age of 40. In terms of education, 36% were illiterate, while only 32% had received secondary education. Nearly 55% of participants came from low socioeconomic backgrounds.

**Risk Factors:** Tobacco use was reported by 86.92% of patients, followed by betel quid and gutka consumption (75.21%). Other contributing factors included chronic trauma from sharp teeth (68.18%), ill-fitting dentures (62.10%), poor oral hygiene (46.76%), alcohol use (15.21%), and malnutrition (8.23%).

**Awareness and Perception:** Only 12.32% of participants were aware of oral cancer. Over 84% believed the disease was not preventable, and 81% believed it was not curable. Despite this, 72.65% expressed willingness to quit tobacco use if informed of its link to oral cancer.

**Attitude Toward Early Diagnosis:**
Just 4% of participants stated they would seek immediate dental consultation upon noticing a lesion, whereas 93% said they would wait several weeks, allowing the lesion to worsen before seeking help.

**Table:01. Descriptive statistics of demographic of population**

| Descriptive statistics of demographics of population, N=120 | | | | |
|---|---|---|---|---|
| | **Number** | **percent** | **Valid percent** | **SD** |
| **Age** | | | | |
| **18-25** | 6 | 5% | 5.001 | 2.13 |
| **26-40** | 18 | 15% | 15.001 | 4.91 |
| **40 above** | 96 | 80% | 80.018 | 5.11 |
| **Gender** | | | | |
| **Male** | 83 | 69% | 69.571 | 1.98 |
| **Female** | 37 | 30% | 30.833 | 2.65 |

**Table: 02. Predisposing risk factors**

| # | risk factors for oral cancers | percent | mean | SD |
|---|---|---|---|---|
| **1** | **Tobacco use** | | | |
| | High | 86.92 | 80.34 | 3.12 |
| | low | 22.18 | 25.81 | 7.12 |
| **2** | **Betal quid and gutka** | | | |
| | yes | 75.21 | 70.16 | 5.21 |
| | no | 15.34 | 20.21 | 3.28 |
| **3** | **Repeated trauma due to sharp cusp teeth** | | | |
| | high | 68.18 | 60.17 | 2.98 |
| | low | 31.20 | 30.17 | 4.17 |
| **4** | **Lose fitted dentures** | | | |

| | | | | |
|---|---|---|---|---|
| | yes | 62.10 | 60.11 | 3.12 |
| **5** | **Oral hygiene** | | | |
| | Present | 46.76 | 40.14 | 1.42 |
| **6** | **Exposure to sunlight** | | | |
| | yes | 25.21 | 30.16 | 5.21 |
| **7** | **Alcohol use** | | | |
| | Present | 15.21 | 20.16 | 3.21 |
| **8** | **Malnutrition** | | | |
| | Present | 8.23 | 10.25 | 3.92 |

**Discussion**

The study highlights a troubling disconnect between high exposure to oral cancer risk factors and extremely poor public awareness in Pakistan. Tobacco and betel quid use remain culturally ingrained and widely consumed despite their known carcinogenic effects. The low awareness about the disease's symptoms, preventability, and treatability leads to delayed diagnoses and poor prognoses. SCC represents the most common form of head and neck cancer which comprised around 90% of all head and neck malignancies. It can arise from all parts of the upper aerodigestive tract, that includes the nasopharynx, lip, oral cavity, oropharynx, hypopharynx, and larynx. Each subside has specific behaviour towards the disease in terms of spread, nodal metastasis and response to treatment. The regional lymph node metastasis is another feature of OSCC. The cervical lymph nodes of the sub- mandibular triangle and upper jugular regions have stronger predilection of regional lymph node metastasis in the case of OSCC of the lower alveolus[13]. Lymph nodes are considered involve if size increased upto 2cm, if palpable, tender and fixed to overlying skin. The prognosis is better in early oral OSCC, especially those that are well-differentiated and without metastasis, but the alarming part is that most cases of OSCC are not diagnosed at the earlier stage of the disease and presented and diagnosed at advanced stage. The OSCC prognosis can vary based on a number of factors that may be related to either tumor or treatment or to the patient. Treatment of OSCC is multimodal including neoadjuvant radiotherapy with or without chemotherapy but surgery remains the corner stone. The primary treatment of early staged disease is always surgery whereas, in intermediate and advanced stage cancers adjuvant radiation alone or a combination of chemo radiotherapy is indicated to reduce the risk of loco-regional spread, recurrence, high-risk pathologic features, or advanced-stage disease. Neck dissection is always preferred in advanced disease cases when lymph node involvement is evident either clinically or radiographically followed by resection and defect replacement with reconstruction. The marginal resection is considered as a treatment option when the defect of bone did not extend beyond the mandibular canal, where as segmental resection done if it extends beyond the mandibular canal[14]. The recent innovations in the field of

cancer therapy are laser based technology photodynamic therapy, immunotherapy, and gene therapy to treat OSCC at a much earlier stage[14].

In our study the male to female ratio was 2.2:1 which is consistent with the study conducted by Khalil ME et al where male to female ratio was 1.5:1 showing male being more prone to OSCC. Similar findings were reported by Hernandez et al study in which they reported a male to female ratio as 1.4:1 in Mexico[16-17].

The middle aged group i.e 45-65 years of age had more periodontal inflammation and affected the most. In the study done by Javed et al majority of patients were male and the mean age of OSCC patients was 47.62±12.18 years Javed et al. Similar results were seen in study done by Anwar et al, which is consistent with our study in which more than forty years of age group is significant[18-19].

It's evident in the study of Balaram et al., 2002 that more than 90% of OSSC cases reported using tobacco products. The tobacco is considered as an independent risk factor because it increases gingival blood flow, arterial blood pressure, heart rate and its relative occurrence is 11 times that of people who never used tobacco Madani et al., 2010b[20-21]. Our study also identified that use of tobacco is the most significant risk factor. The patients with long term denture wearers using ill-fitting dentures, the oral mucosa is subjected to change due to chronic irritation, if wearing dentures for more than 15 years and not visiting a dentist regularly highly associated with OSSC (Guneri et al., 2005). The study focused on the prevalence and contributing factors of oral cancer in Pakistan. The findings highlighted to raise awareness and educate people about the worst effects of these factors and this has driven the attitude towards avoidance and quitting some of the bad habits like tobacco and alcohol use. The limitation of this study is that it is done in population of one city so it cannot be generalized on whole population of the country.

Consistent with regional trends in South Asia, the findings point to a dire need for national awareness campaigns, school-level education, and public service announcements focusing on oral health, cancer prevention, and routine screening.

Given the high prevalence of risk factors and delayed presentation of patients, nationwide oral cancer screening and prevention programs should be made a public health priority. Dental professionals and primary healthcare providers must be trained to educate patients and perform early oral cancer assessments.

## Conclusion

Oral cancer continues to rise across Pakistan due to high exposure to preventable risk factors and critically low public awareness. This study exposes the urgent need for targeted interventions, especially in rural and low-income communities. Public health campaigns should focus on educating the population about the consequences of tobacco and betel quid use, promoting regular dental checkups, and encouraging early medical consultation for suspicious oral lesions.

By addressing these gaps through awareness, policy, and prevention, Pakistan can make significant strides in reducing the burden of this largely preventable but often fatal disease.

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