



"Prevalence of Oral Cancer: An Institution-Based Retrospective Study Over Two Years from Maharashtra, India"

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Introduction

Oral cancer remains a significant public health concern, particularly in developing countries like India, where it ranks among the most common types of cancer. The burden of this disease is especially high in states like Maharashtra, where tobacco consumption in various forms is widespread. Despite advancements in diagnostic and therapeutic approaches, the prognosis of oral cancer largely depends on the stage at which it is detected. Early detection and awareness are critical in improving survival rates and reducing the disease burden.

Institution-based retrospective studies play a vital role in understanding the prevalence and trends of oral cancer over time. They provide valuable insights into demographic patterns, common anatomical sites involved, and the association with lifestyle risk factors. This information is essential for designing targeted public health strategies and resource allocation for prevention and early intervention.

The present study aims to assess the prevalence of oral cancer cases diagnosed over a two-year period at a tertiary care institution in Maharashtra. By analyzing patient records, this study seeks to highlight key epidemiological patterns and contribute to the existing body of knowledge on oral cancer in the region.

Materials and Methods

This institution-based retrospective study was carried out at SMBT Dental College and Hospital, located in Sangamner, District Ahilyanagar, of Maharashtra state. The objective was to assess the prevalence and demographic distribution of oral cancer cases over a two-year period, from January 2022 to December 2023.

Study Design and Ethical Approval

The study followed a retrospective, observational design. Ethical clearance was obtained from the Institutional Ethical Committee of SMBT Dental College prior to data collection. Patient confidentiality and data protection were maintained throughout the study, and no personal identifiers were used in analysis.

Data Source and Inclusion Criteria

Data were obtained by reviewing the case records and electronic databases of the Department of Oral Medicine and Radiology and the Department of Oral and Maxillofacial Surgery and microscopic slides from the Department of Oral and Maxillofacial Pathology. The inclusion criteria were as follows:

- Patients with a histopathologically confirmed diagnosis of oral cancer.
- Patients who reported to the institute within the study period (Jan 2022 – Dec 2023).
- Patients of all age groups and genders.

Exclusion Criteria

- Patients with incomplete or missing records.
- Patients with precancerous lesions or conditions without a confirmed diagnosis of malignancy.
- Patients diagnosed outside the specified period.

Data Collection

A structured data extraction sheet was prepared to systematically collect relevant clinical and demographic information, including: Age and gender, Anatomical site of the lesion, Histopathological type of oral cancer (where available), Tobacco use (smoking, smokeless, or both), Alcohol consumption, Other relevant habits (e.g., betel nut chewing), Duration of symptoms before diagnosis.

Sample Size

A total of 30 oral cancer patients met the inclusion criteria during the two-year study period and were included in the final analysis.

Data Management and Analysis

Collected data were first entered into Microsoft Excel for cleaning and organization. The variables were then categorized and coded appropriately for analysis. Descriptive statistical methods, including frequencies, percentages, mean, and standard deviation, will be used to summarize the data. Further statistical analysis, including bivariate and multivariate analysis, will be conducted to assess associations between risk factors and demographic variables using statistical software SPSS .

Statistical Analysis

The data collected from patient records were compiled and organized using Microsoft Excel. Categorical variables such as gender, anatomical site of the lesion, and presence of risk factors (tobacco use, alcohol consumption, etc.) were expressed as frequencies and percentages. Continuous variables such as age were summarized using mean and standard deviation.

All statistical analyses were performed using IBM SPSS Statistics software. The association between demographic factors (such as age and gender) and risk habits (such as tobacco or alcohol use) with the occurrence of oral cancer at specific anatomical sites was evaluated using the Chi-square test or Fisher's exact test, as appropriate. A p-value of less than 0.05 was considered statistically significant.

For further analysis, where applicable, cross-tabulations were created to explore potential relationships between multiple variables. In addition, binary logistic regression may be employed to identify independent risk factors associated with oral cancer presentation, depending on the distribution of variables.

The results of the analysis will be presented in the form of tables, graphs, and charts to ensure clarity and better interpretation of the findings.

Results

A total of 30 patients diagnosed with oral cancer over a period of two years were included in this study. The age range of the patients was between 20 to 75 years, with a mean age of 48.6 years (± 13.2 SD).

Gender Distribution

Out of the 30 patients, 18 were male (60%) and 12 were female (40%).

Habit History

A significant proportion of patients had a history of tobacco and alcohol use:

- 24 patients (80%) were tobacco chewers.
- 14 out of 18 males (77.8%) also reported alcohol consumption in addition to tobacco use.
- 3 patients (10%) were cigarette smokers.
- 2 patients (6.7%) specifically consumed gutkha, a commercially prepared form of smokeless tobacco.

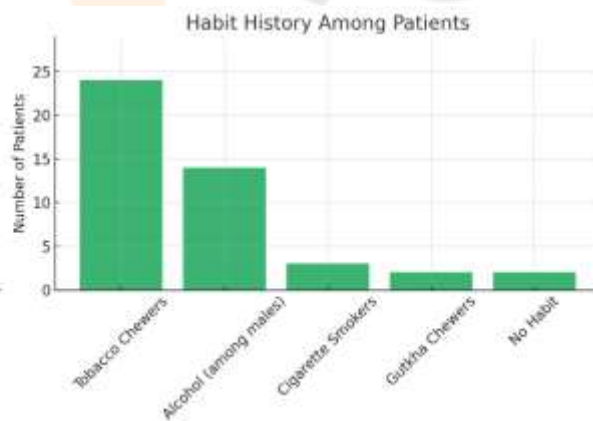
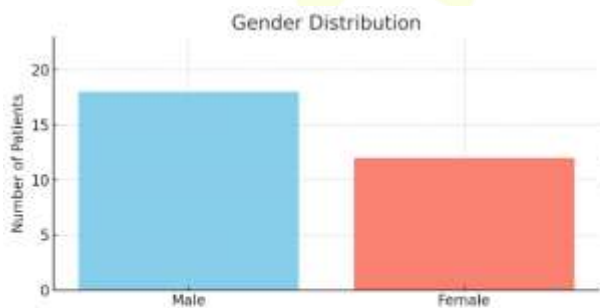
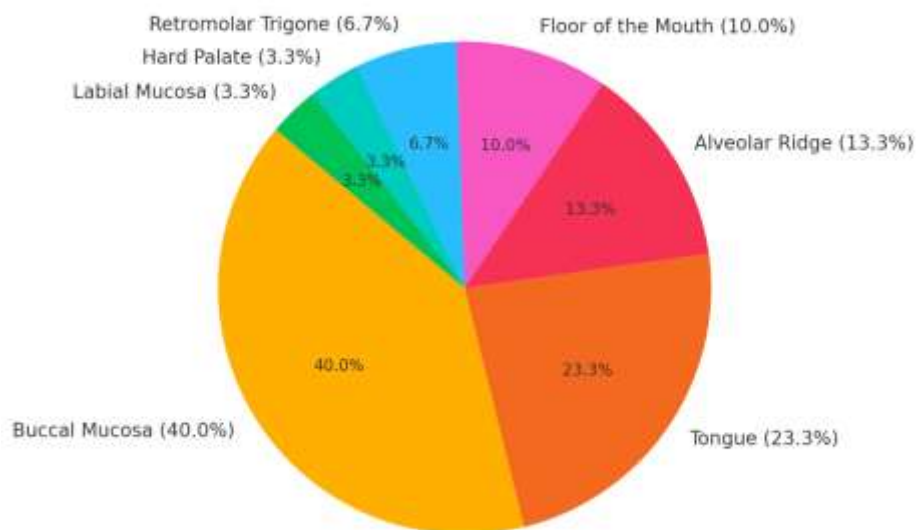
Only 2 patients (6.7%) reported having no identifiable risk habit.

Anatomical Site Distribution

The distribution of oral cancer cases based on anatomical site is as follows

Anatomical Site	Number of Cases	Percentage (%)
Buccal Mucosa	12	40.0%
Tongue	7	23.3%
Alveolar Ridge	4	13.3%
Floor of the Mouth	3	10.0%
Retromolar Trigone	2	6.7%
Hard Palate	1	3.3%
Labial Mucosa	1	3.3%
Total	30	100%

The buccal mucosa was found to be the most commonly affected site, accounting for 40% of the total cases, followed by the tongue (23.3%). These findings are consistent with the predominant use of smokeless tobacco, particularly in the form of chewing.



Research Through Innovation

Discussion

This retrospective study evaluated the prevalence and characteristics of oral cancer cases reported to SMBT Dental College and Hospital over a two-year period. The findings provide insight into the demographic profile, associated risk factors, and commonly affected anatomical sites among patients from this region of Maharashtra.

The study observed a male predominance (60%), consistent with existing literature, which attributes higher prevalence in males to increased exposure to risk habits such as tobacco and alcohol use. The mean age of affected individuals was approximately 48.6 years, indicating that oral cancer continues to impact individuals in the most productive years of life.

A significant finding in this study is the high prevalence of tobacco chewing (80%), a well-established etiological factor for oral cancer in India. Moreover, 77.8% of males with oral cancer also consumed alcohol, underscoring the synergistic effect of tobacco and alcohol in oral carcinogenesis. These findings are in line with previous studies that emphasize the dose-dependent and multiplicative risk posed by combined habits.

The buccal mucosa emerged as the most commonly affected site (40%), followed by the tongue (23.3%). This distribution mirrors the pattern of tobacco placement in the oral cavity, particularly in smokeless tobacco users. The predominance of buccal mucosa involvement supports the strong correlation between site-specific exposure and malignant transformation.

While a smaller proportion of patients were cigarette smokers (10%) or gutkha users (6.7%), their contribution to oral cancer development cannot be overlooked. Interestingly, only 2 patients (6.7%) reported no identifiable harmful habits, suggesting that non-traditional risk factors such as genetic predisposition, poor oral hygiene, or viral infections may play a role in a minority of cases.

The findings of this study highlight the ongoing public health challenge posed by tobacco-related oral cancers in rural and semi-urban parts of Maharashtra. The patterns observed also reinforce the need for community-based awareness campaigns, early screening programs, and habit intervention strategies targeted toward high-risk populations.

However, the study is limited by its retrospective design, relatively small sample size, and lack of follow-up or staging data. Future prospective studies with larger populations and survival outcomes would provide a more comprehensive understanding of disease progression and treatment response.

Conclusion

This two-year retrospective study highlights a significant burden of oral cancer among patients reporting to SMBT Dental College, with a clear male predominance and strong association with tobacco and alcohol use. The buccal mucosa was identified as the most commonly affected site, correlating with the prevalent habit of smokeless tobacco chewing in the region.

These findings underscore the urgent need for enhanced public health interventions focusing on habit cessation, early screening, and community awareness, particularly in rural and semi-urban areas of Maharashtra. Strengthening preventive strategies and implementing regular oral health check-ups at the primary care level could play a crucial role in reducing the incidence and improving early detection of oral cancer.

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