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Original Research Article

Sociodemographic, lifestyle and oral health profile of oral cancer patients attending a cancer treatment facility

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ABSTRACT

Background: Oral cancer remains a significant public health concern, particularly in low and middle-income countries. Behavioural risk factors like tobacco use, poor oral hygiene, and delayed diagnosis contribute to disease burden. This study described the sociodemographic characteristics, lifestyle behaviors, and oral hygiene practices of diagnosed oral cancer patients attending a cancer treatment facility.
Methods: A retrospective-prospective descriptive study design was adopted. Sample consists of 91 adult oral cancer patients attending the treatment facility during the two-month study period. Data was collected from existing medical records and supplemented through direct assessment of newly attending and follow-up patients. Study excludes unwilling, critically ill and deceased patients with incomplete records.
Results: Participants were middle-aged to elderly, largest proportion (40.7%) being 51-60 years, and majorly males (74.7%). High proportion were tobacco smokers (67.0%). 67.2% smoked more than 10 times/day, indicating heavy smoking behavior. Smokeless tobacco use was even more common, reported by 70.3% of participants. Alcohol consumption was low (9.9%). Most common site for cancer was buccal mucosa and buccal vestibule (41.7%). Oral hygiene practices were suboptimal, 3.3% followed the recommended twice-daily brushing. Regular dental visits were low (29.7%), all participants were examined with poor oral hygiene status. Awareness level about oral cancer and its risk factors is high (98.9%) but preventive practices remain low.
Conclusions: Our study highlights a high burden of behavioural risk factors along with poor oral hygiene practices. Although awareness levels of oral cancer were high, preventive practices and behavioural modifications remain inadequate.

Keywords: Awareness, Behavioural modifications, Oral cancer, Oral hygiene, Tobacco use

INTRODUCTION

Oral cancer constitutes a major public health challenge globally and is particularly prevalent in low- and middle-income countries. According to the Global Cancer Observatory, cancers of the lip and oral cavity account for a substantial proportion of cancer-related morbidity and mortality worldwide, with South and Southeast Asia contributing a disproportionately high burden.[1] In India, oral cancer ranks among the top three cancers in terms of incidence, accounting for nearly one-third of the global oral cancer cases.[2] Widespread use of tobacco in smoked and smokeless forms, betel quid chewing, and alcohol consumption are major causes.[3] Additionally, poor oral hygiene, periodontal disease, lack of regular dental check-ups and dietary deficiencies, particularly low intake of fruits and vegetables have been associated with increased susceptibility to oral lesions and malignancy.[4-7] Moreover, a significant proportion of patients continue to present at an advanced stage of the disease. This delayed presentation is due to low awareness of early symptoms, socioeconomic disadvantages, and limited access to preventive and diagnostic oral health services.[8] Studies have shown that individuals from economically

disadvantaged backgrounds are more likely to engage in high-risk behavior and have limited access to preventive dental care, contributing to delayed diagnosis and higher oral cancer prevalence.[9,10]

WHO reports that oral diseases are the most widespread noncommunicable diseases (NCDs) affecting almost half (45%) of the world's population over the life course from early life to old age.[11] Oral hygiene and health status play a crucial role in the occurrence and progression of oral cancer. Understanding sociodemographic characteristics, lifestyle behaviours, and oral health profile of oral cancer patients attending cancer treatment institutions provide valuable insights into modifiable risk determinants and healthcare-seeking behaviour. Such evidence can assist policymakers, health professionals, and providers in designing effective awareness programmes. Screening initiatives, tobacco cessation strategies, and oral health promotion activities can reduce the burden of oral cancer and improve quality of life among affected individuals.

Our study aimed to assess the sociodemographic characteristics, lifestyle behaviours, and oral health profile of oral cancer patients attending a cancer treatment institution. It also sought to identify common risk factors such as tobacco use, alcohol consumption, and oral hygiene practices and dental care-seeking behaviour associated with oral cancer among the study participants. This would help to generate evidence that can support the development of oral health promotion and cancer prevention strategies at regional levels.

METHODS

Study design, sample size and study setting

The study was institution-based and descriptive in nature. A retrospective-prospective design method was adopted. The study was time bound, and the sample included 91 adult oral cancer patients attending the treatment facility.

Data regarding sociodemographic characteristics, lifestyle factors, and oral health profile was collected from existing medical records and supplemented through direct assessment of newly attending and follow-up patients.

The cancer treatment facility caters to both urban and rural populations and serves as a referral center for surrounding regions. Study duration was from 1st June to 31st July 2025.

Inclusion criteria

Patients diagnosed with oral cancer attending the selected cancer treatment facility during the study period. Newly attending and follow-up oral cancer patients willing to participate in the study. Patients whose medical records contained all relevant clinical and demographic information.

Exclusion criteria

Patients who were unwilling to participate in the study. Critically ill patients who were unable to respond or undergo assessment. Deceased patients, and records with insufficient or missing essential information were excluded from the study.

Data collection tool and technique

Data was collected using a pre-designed, semi-structured questionnaire. Interviews with newly attending and follow-up patients helped to collect relevant information about socio-demographic characteristics, medical history, lifestyle and behavioral factors, dietary habits, oral hygiene practices, and presenting symptoms. Relevant clinical details were obtained from medical records and by examination. Descriptive statistics such as frequency and percentage is used to summarize the findings. Photo plates are used to document selected clinical presentations.

RESULTS

The age distribution shows that most participants were middle-aged to elderly. with the largest proportion aged 51-60 years (40.7%), followed by 41-50 years (27.5%) and ≥61 years (25.3%). No participant was in the age category of 18-30 years. None of the participants were illiterate, 63.7% participants completed secondary education, while 26.4% studied till graduation and above. Majority were engaged in informal occupations (65.9%), followed by housewives (16.5%), business (9.9%), agriculture (4.4%), and salaried service (3.3%). 30.8% participants belonged to lower- and middle-income groups, with the largest share earning ₹10,001-20,000, followed by ₹50,001 and above (20.9%). Place of residence was majorly urban (72.5%). A clear male predominance was observed as 74.7% participants were males, 25.3% were females (Table 1).

Table 2 presents the medical history and lifestyle habits of the participants. None reported a family history of oral cancer or long-term medication use. The most common site of oral cancer (41.7%) was buccal mucosa and buccal vestibule, followed by tongue (21.9%). High proportion were tobacco smokers (67.0%). Among smokers, 67.2% smoked more than 10 times/day, indicating heavy smoking behaviour. Smokeless tobacco use was even more common, reported by 70.3% of participants. Alcohol consumption was low (9.9%) in our study population. Our findings in Table 2 are in line with Indian clinical studies showing tobacco chewing, smoking and alcohol intake as major contributors to oral cancer, while alcohol use was comparatively less common in this sample (Table 2).[12-13]

Table 1: Socio-demographic characteristics of study participants (n=91).

Variables	Categories	N	%
Age group (in years)	18-30	0	0
	31-40	6	6.6
	41-50	25	27.5
	51-60	37	40.7
	61 and above	23	25.3
Gender	Male	68	74.7
	Female	23	25.3
Marital status	Single	0	0
	Married	91	100
Education status	Primary	0	0
	Secondary	58	63.7
	Higher Secondary	9	9.9
	Graduate and above	24	26.4
Occupation	Service	3	3.3
	Business	9	9.9
	Agriculture	4	4.4
	Housewife	15	16.5
	Others (daily wage earners, domestic helpers, casual workers)	60	65.9
Monthly family income	<10,000	7	7.7
	10,001–20,000	28	30.8
	20,001–30,000	15	16.5
	30,001–40,000	15	16.5
	40,001–50,000	7	7.7
	50,001 and above	19	20.9
Place of residence	Urban	66	72.5
	Rural	25	27.5

Table 2: Patient medical history and lifestyle habits (n=91).

Variables	Categories	N	%
Family history of oral cancer	Yes	0	0
	No	91	100
Oral ulcer (Red/white patch) present	Yes	76	83.5
	No	15	16.5
Site of cancer	Buccal mucosa and buccal vestibule	38	41.7
	Tongue	20	21.9
	Palate	11	12.1
	Gingival-alveolar ridge	7	7.8
	Others (lips, labial vestibule, floor of mouth)	15	16.5
Tobacco smoking (smoking form as cigarette/beedi)	Yes	61	67
	No	30	33
***Smoking frequency >10 numbers/day**	Yes	41	67.2
***Smoking frequency <10 numbers/day**	No	20	32.8
Consumption of tobacco (gutkha, khaini, paan)	Yes	64	70.3
	No	27	29.7
Consumption of alcohol	Yes	9	9.9
	No	82	90.1
Long-term medication use	Yes	0	0
	No	91	100

*Percentages for smoking frequency is calculated among smokers only (n=61).

Table 3: Oral hygiene practices and awareness (n=91).

Variables	Categories	N	%
Once brushing in a day	Yes	88	96.7
Twice brushing in a day (recommended)	Yes	3	3.3
Use of Toothpaste (recommended)	Yes	91	100
Use of other substances (majan, powder, ash, etc.)	Yes	0	0
Brush change within three months (recommended)	Yes	3	3.3
Brush change every three months to one year	Yes	4	4.4
Brush change >one year	Yes	84	92.3
Regular dental visit	Yes	27	29.7
	No	64	70.3
Current dental hygiene is good	Yes	0	0
	No	91	100
Heard about oral cancer	Yes	91	100
	No	0	0
Knowledge about tobacco chewing, smoking, alcohol intake and poor oral hygiene can cause oral cancer	Yes	90	98.9
	No	1	1.1

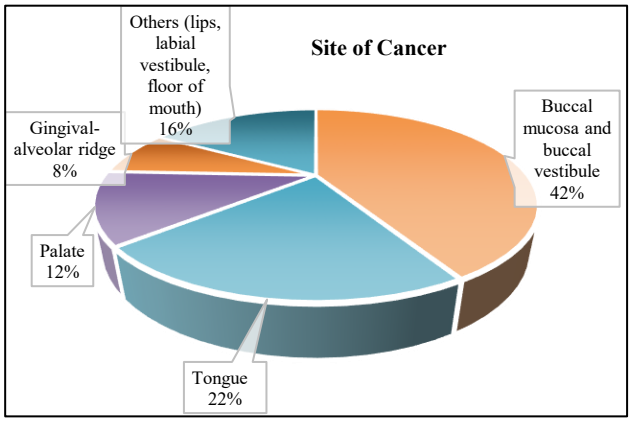

Figure 1: Site of cancer distribution in study participants.

Figure 2: Study participant showing signs of oral leukoplakia.

The oral hygiene profile in Table 3 shows a mismatch between awareness and practice. All participants had heard about oral cancer, 98.9% knew that tobacco chewing or smoking, or alcohol intake and poor oral hygiene can cause oral cancer, but most (96.7%) brushed only once a day, very few (3.3%) followed the recommended brushing frequency or brush replacement interval and regularly visited a dentist. All participants used toothpaste (100%), but toothbrush replacement was poor, with 92.3% changing their brush after more than one year. Only 3.3% followed the recommended three-month replacement. 83.5% participants reported the presence of oral ulcers or white patches (Figure 2). Regular dental visits were low (29.7%), and not a single participant was examined with good oral hygiene.

Figure 3: Study participant examined with poor oral hygiene, periodontal disease, and missing teeth.

DISCUSSION

The findings in Table 1 are consistent with the broader Indian oral cancer profile, where lip and oral cavity cancer remains one of the most common cancers, prominent among men, reflecting the strong link with long-term exposure to preventable behavioral risks and social disadvantage.[1,13,14]

The most common site of oral cancer (41.7%) was buccal mucosa and buccal vestibule (Figure 1). This site distribution strongly indicates the role of smokeless tobacco (guthka, khaini, paan with betel quid) consumption which is widely practiced in India. Tobacco chewing products are typically retained in the buccal vestibule for prolonged periods, resulting in continuous exposure of the mucosa to carcinogenic substances such as nitrosamines and polycyclic aromatic hydrocarbons. Saliva mixed with tobacco juice in the floor of the mouth increases the contact time of carcinogens, making these sites highly vulnerable to malignant transformation. Similar findings have been consistently reported in studies from south and southeast Asia, where chewing tobacco is a dominant risk factor for oral cancer.[15,16]

Poor oral hygiene is increasingly recognized as an additional risk factor for oral cancer. Recent evidence suggests that periodontal disease, poor oral hygiene, and tooth loss are associated with higher odds of oral cancer (Figure 3).[17,18] Similar awareness–practice gaps have also been reported in Indian and other smokeless-tobacco user populations, where knowledge of oral cancer exists but preventive behaviour practices remain inadequate.[19-21]

This study has certain limitations. The study duration was only two months. Hence it involves a relatively small number (n=91) oral cancer patients attending a single cancer treatment facility. The findings may not be generalizable to the wider population. In addition, the descriptive nature and small sample size limits the ability to establish causal relationships between lifestyle factors and oral cancer. Future multicentric studies with bigger sample size and longer follow-up period can be done to understand association between behavioral risk factors, oral hygiene practices, and oral cancer outcomes.

Nevertheless, the findings help to identify common behavioural risk factors and gaps in oral hygiene practices among affected individuals. Healthcare professionals and policymakers can use the evidence in designing awareness programmes, tobacco cessation interventions, oral cancer screening activities, and oral health promotion strategies, particularly among high-risk populations

CONCLUSION

Tobacco use, poor oral hygiene practices, and inadequate preventive awareness were commonly observed among the study participants. This reflects the persisting public health challenge posed by preventable lifestyle-related factors. Patients were predominantly men from economically vulnerable backgrounds with heavy tobacco exposure and poor oral hygiene practices. This combination is highly relevant for oral cancer risk. The researchers suggest a need for oral hygiene awareness, strengthening early screening programs, stronger tobacco cessation counselling, and routine examination in high-risk groups.

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