

## Original Research Article

# EVALUATION OF SOCIO-DEMOGRAPHIC PROFILE, CLINICAL CHARACTERISTICS, AND ASSOCIATED RISK FACTORS IN HEAD AND NECK CANCER PATIENTS ATTENDING THE ONCOLOGY OPD OF GOVERNMENT MEDICAL COLLEGE, MAHASAMUND, CHHATTISGARH

Alok Kumar Dewangan<sup>1</sup>, Nisarga Bhama<sup>1</sup>, Chanchal Lahari<sup>2</sup>

<sup>1</sup>Senior Resident, Department of Radiation Oncology, Government Medical College Mahasamund Chhattisgarh, India

<sup>2</sup>Senior Resident, Department of ENT, Government Medical College Mahasamund Chhattisgarh, India

Received : 05/09/2025  
Received in revised form : 11/10/2025  
Accepted : 31/10/2025

## Corresponding Author:

Dr. Alok Kumar Dewangan,  
Senior Resident, Department of  
radiation oncology, Government Medical  
College Mahasamund Chhattisgarh,  
India.  
Email: alok0409dewangan@gmail.com

DOI: 10.70034/ijmedph.2025.4.178

Source of Support: Nil,  
Conflict of Interest: None declared

Int J Med Pub Health  
2025; 15 (4); 995-999

## ABSTRACT

**Background:** Head and neck cancers (HNCs) constitute a major health burden in India, accounting for a significant proportion of all malignancies. This study was conducted to evaluate the socio-demographic profile, clinical characteristics, and associated risk factors among patients with head and neck cancer in a rural population of Chhattisgarh.

**Materials and Methods:** This cross-sectional, observational study was conducted at Oncology OPD of Government Medical College, Mahasamund, Chhattisgarh from June 2022 to May 2025. This study included 158 patients with histologically confirmed head and neck cancer. Data regarding socio-demographic details, clinical presentation, and lifestyle-related risk factors were collected using a structured questionnaire.

**Results:** The mean age of patients was  $50.2 \pm 11.1$  years (range: 26–80), with most cases observed in the 40–59-year age group. Males constituted 71.5% of the study population. A large proportion belonged to the lower socioeconomic class (75.3%) and were married (98.7%). Carcinoma of the buccal mucosa (50.6%) and tongue (25.9%) were the most common sites. The predominant presenting symptom was a non-healing ulcer (57.5%), followed by pain (12.6%) and whitish patches (11.3%). Tobacco-related habits were reported in 98.7% of cases, with gudakhu use alone or in combination with smoking and alcohol being highly prevalent.

**Conclusion:** Head and neck cancers in this cohort were strongly linked to tobacco-related habits, particularly smokeless tobacco, and were most prevalent among middle-aged males from lower socioeconomic backgrounds.

**Keywords:** Head and neck cancer, socio-demographic profile, buccal mucosa carcinoma, tobacco.

## INTRODUCTION

Head and neck cancers (HNCs) are a diverse category of malignancies which arise in both the mucosal layers of the oral cavity, pharynx, larynx, nasal cavity and paranasal sinuses, and the salivary glands.<sup>[1]</sup> These cancers are a major health burden internationally because they have been reported to have more than 600,000 new incidences and about 350,000 deaths per year. In low and middle-income

countries such as India, the incidence is on the increase as a result of continuous exposure to modifiable risk factors and late diagnosis.<sup>[2]</sup> The HNCs in India are almost one-third of all the cancer cases and oral cavity cancer types are especially prevalent due to the high usage of the smokeless tobacco consumption and the use of areca nut products. This causes the country to be among the highest burdened countries on the prevalence of head and neck malignancies in the world.<sup>[3]</sup> The socio-

demographic background of HNC patients has been reported to have a significant impact on both risk and outcome. The age factor is a decisive factor and the majority of the cases are in the fifth- seventh decades of life but a progressive increase in young age has been observed, partly as a result of the lifestyle changes.<sup>[4]</sup> Male dominance is well in place and represents increased exposure to tobacco, alcohol and work hazards. Nevertheless, the increasing cases of women, which are associated with the second-hand smoking, smokeless tobacco, and indoor air pollution, point towards a changing trend of the epidemiology. Disease patterns are further influenced by socioeconomic status, literacy levels, and occupational background; people who belong to poor communities will tend to present with the disease in an advanced form due to the lack of awareness and access to facilities that provide specialized healthcare services.<sup>[5]</sup> HNC has a variable clinical presentation that varies according to the involved subsite. The usual symptoms are non-healing oral ulcers, hoarseness, dysphagia, swelling in the neck, epistaxis, and chronic sore throat. Notably, a good number of patients ignore these early warning signs claiming that they relate to benign conditions, which also leads to diagnostic delay.<sup>[6]</sup> By the time patients present themselves to the medical care they already have a large number of them with locally advanced or metastatic disease, which severely limits treatment modalities and survival rates. The diagnosis stage of the tumor is one of the strongest predictors of its prognosis, but in rural and semi-urban areas, late presentation is rather a rule than an exception. HNC is multifactorial in its etiology.<sup>[7]</sup> The most important risk factor is tobacco use in its different forms namely, cigarette smoking, the bidi smoking, chewing tobacco and gutkha. Alcohol use has a synergetic effect with tobacco, which strongly intensifies the cancer-initiating effects. Another known cause in South Asia with or without tobacco is betel quid chewing which is one of the causes that result in oral submucous fibrosis and malignant transformation. Viral agents Viral agents largely contribute to oropharyngeal cancers: HPV-positive tumors exhibit different biological behavior and better prognosis than HPV-negative tumors do.<sup>[8]</sup> Other factors are ineffective oral health, irritation due to improperly made dentures, nutritional deficiencies, job related exposure to dust and chemicals, and hereditary factors. Studies in various regions of India have always indicated that patients in rural and tribal areas have challenges that are even more difficult. Poor health infrastructure, low health literacy, and relying on traditional medicine slow down the delivery of presentation and initiation of treatments. Primary referral centers serve large rural catchment areas, e.g. Government hospitals and medical colleges including Government Medical College, Mahasamund in Chhattisgarh. Knowledge of the clinical and demographic peculiarities of patients operating in such facilities is needed to work out effective screening programs, early diagnosis,

and preventive measures that correspond to the local requirements. As an example, the efforts to deal with the problem of smokeless tobacco use in rural areas might be more effective, compared to generic anti-smoking campaigns. On the side of the public health, assessment of the socio-demographic and clinical features of HNC patients gives important information on the determinants of the disease.

The study was aimed at assessing the socio-demographic profile, clinical characteristics and risk factors related to a head and neck cancer patient in a rural Chhattisgarh population.

## MATERIALS AND METHODS

This cross-sectional, observational study was conducted at Oncology OPD of Government Medical College, Mahasamund, Chhattisgarh from June 2022 to May 2025. This study included 158 patients with histologically confirmed head and neck cancer. Non-probability consecutive sampling was employed.

### Inclusion Criteria:

- Patients aged  $\geq 18$  years.
- Patients with a confirmed clinical and/or histopathological diagnosis of head and neck cancer.
- Patients who provided informed consent.

### Exclusion Criteria:

- Patients with recurrent head and neck cancers who had already undergone definitive treatment.
- Patients with incomplete clinical data or those unwilling to participate.

**Data Collection:** Data were collected using a structured, pre-tested questionnaire. Information was obtained regarding socio-demographic details (age, gender, education level, occupation, socioeconomic status, residence), clinical presentation (site of cancer, presenting symptoms, duration of illness, stage at diagnosis), and associated risk factors (tobacco use, alcohol consumption, betel quid chewing, dietary habits, oral hygiene practices, family history of cancer, and comorbidities). Clinical staging was assessed according to the TNM classification system. Relevant investigations and histopathological reports were reviewed to confirm diagnosis.

**Statistical Analysis:** Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26.0. Descriptive statistics were used to summarize socio-demographic variables, clinical features, and risk factors. Continuous variables were presented as mean  $\pm$  standard deviation, while categorical variables were expressed as frequencies and percentages. A p-value  $< 0.05$  was considered statistically significant.

## RESULTS

Data were collected from 158 patients, mean age of the patients was  $50.2 \pm 11.1$  years (range: 26–80). The majority of cases fell within the 40–59 year age

group, which together accounted for 63.3% of patients, while only 1.3% were under 30 years of age and 8.2% were  $\geq 70$  years. Males were more frequently affected, comprising 71.5% of cases, compared to 28.5% females. Almost all patients were married (98.7%), reflecting the demographic structure of the cohort. Literacy was observed in

77.8% of patients, while 22.2% were illiterate. The religious distribution showed predominance of Hindus (97.5%), with very few Muslims (1.9%) and Christians (0.6%). Socioeconomic stratification revealed that most patients belonged to the lower socioeconomic class (75.3%), with only 24.7% from the middle class.

**Table 1: Demographic Profile of Patients (n = 158)**

| Variable             | Category                                      | n   | %     |
|----------------------|-----------------------------------------------|-----|-------|
| Age (years)          | Mean $\pm$ SD: 50.2 $\pm$ 11.1 (Range: 26–80) | 158 | 100.0 |
| Age Groups           | <30                                           | 2   | 1.3   |
|                      | 30–39                                         | 21  | 13.3  |
|                      | 40–49                                         | 52  | 32.9  |
|                      | 50–59                                         | 48  | 30.4  |
|                      | 60–69                                         | 22  | 13.9  |
|                      | $\geq 70$                                     | 13  | 8.2   |
| Sex                  | Male                                          | 113 | 71.5  |
|                      | Female                                        | 45  | 28.5  |
| Marital Status       | Married                                       | 156 | 98.7  |
|                      | Unmarried                                     | 2   | 1.3   |
| Education            | Literate                                      | 123 | 77.8  |
|                      | Illiterate                                    | 35  | 22.2  |
| Religion             | Hindu                                         | 154 | 97.5  |
|                      | Muslim                                        | 3   | 1.9   |
|                      | Christian                                     | 1   | 0.6   |
| Socioeconomic Status | Lower class                                   | 119 | 75.3  |
|                      | Middle class                                  | 39  | 24.7  |

The buccal mucosa was the most common site of malignancy, reported in 50.6% of patients, followed by the tongue (25.3%). Less frequent sites included central alveolus (5.7%), lip (5.1%), gingivobuccal sulcus (4.4%), floor of mouth (1.9%), lower alveolus (1.9%), maxillary antrum (1.3%), and retromolar trigone (1.3%). Rare sites such as nasopharynx, hard palate, and pyriform fossa collectively accounted for 1.9%. Laterality analysis revealed a predominance of left-sided lesions (52.5%), followed by right-sided

(32.9%), lower (11.4%), and central lesions (3.2%). The most common presenting symptom was a non-healing ulcer, noted in 57% of cases, followed by whitish patches (10.8%) and pain at any site (9.5%). Other symptoms included loosening of teeth (4.4%), verrucous mass (3.8%), difficulty in mouth opening (3.2%), difficulty in tongue movement (2.5%), and miscellaneous complaints such as nasal bleeding and voice change (8.8%).

**Table 2: Clinical Characteristics of Patients**

| Variable      | Category                                 | n  | %    |
|---------------|------------------------------------------|----|------|
| Disease Site  | Buccal mucosa                            | 80 | 50.6 |
|               | Tongue                                   | 41 | 25.9 |
|               | Central alveolus                         | 9  | 5.7  |
|               | Lip                                      | 8  | 5.1  |
|               | Gingivobuccal sulcus                     | 7  | 4.4  |
|               | Floor of mouth                           | 3  | 1.9  |
|               | Lower alveolus                           | 3  | 1.9  |
|               | Maxillary antrum                         | 2  | 1.3  |
|               | Retromolar trigone                       | 2  | 1.3  |
|               | Nasopharynx, Hard palate, Pyriform fossa | 3  | 1.9  |
| Laterality    | Left                                     | 83 | 52.5 |
|               | Right                                    | 52 | 32.9 |
|               | Lower                                    | 18 | 11.4 |
|               | Central                                  | 5  | 3.2  |
| First Symptom | Non-healing ulcer                        | 91 | 57.5 |
|               | Pain (any site)                          | 20 | 12.6 |
|               | Whitish patch                            | 18 | 11.3 |
|               | Difficulty in mouth opening              | 10 | 6.3  |
|               | Loosening of teeth                       | 7  | 4.4  |
|               | Verrucous mass                           | 6  | 3.8  |
|               | Difficulty in tongue movement            | 4  | 2.5  |
|               | Others (nasal bleed, voice change, etc.) | 2  | 1.2  |

Tobacco-related exposure was the predominant risk factor, observed in 98.7% of patients. The most common habit was combined use of smoking,

alcohol, and gudakhu (40.5%), followed by gudakhu alone (26.5 %). Other combinations included smoking with alcohol (10.7%), smoking with

gudakhu (8.8%), alcohol with gudakhu (5.0%), and smoking alone (4.4%). A minority of patients (1.2%) reported mixed or no habits. Regarding dietary

practices, the majority of patients consumed a mixed diet (80.4%), while 19.6% were vegetarian.

**Table 3: Risk Factors and Lifestyle Habits**

| Variable         | Category                    | n   | %    |
|------------------|-----------------------------|-----|------|
| Habits           | Smoking + Alcohol + Gudakhu | 64  | 40.5 |
|                  | Gudakhu only                | 42  | 26.5 |
|                  | Smoking + Alcohol           | 17  | 10.7 |
|                  | Smoking + Gudakhu           | 14  | 8.8  |
|                  | Alcohol + Gudakhu           | 8   | 5.0  |
|                  | Smoking only                | 7   | 4.4  |
|                  | Others / Nil                | 2   | 1.2  |
| Risk Factor Type | Tobacco-related             | 156 | 98.7 |
|                  | Non-tobacco                 | 2   | 1.3  |
| Diet             | Mixed diet                  | 127 | 80.4 |
|                  | Vegetarian                  | 31  | 19.6 |

Chi-square analysis revealed a statistically significant association between sex and site of cancer ( $\chi^2 = 6.67$ ,  $p = 0.0356$ ), with males more likely to have tongue cancers compared to females. No

statistically significant associations were observed between cancer site and habits ( $\chi^2 = 1.65$ ,  $p = 0.4376$ ) or socioeconomic status ( $\chi^2 = 4.35$ ,  $p = 0.1137$ ).

**Table 4: Statistical Associations**

| Variable     | Buccal Mucosa n (%) | Tongue n (%) | Others n (%) | $\chi^2$ | p-value |
|--------------|---------------------|--------------|--------------|----------|---------|
| Sex (Male)   | 64 (56.6)           | 33 (29.2)    | 16 (14.2)    | 6.67     | 0.0356* |
| Sex (Female) | 23 (51.1)           | 8 (17.8)     | 14 (31.1)    |          |         |
| Habits       | 85 (54.5)           | 41 (26.3)    | 30 (19.2)    | 1.65     | 0.4376  |
| SES – Lower  | 62 (52.1)           | 30 (25.2)    | 27 (22.7)    | 4.35     | 0.1137  |
| SES – Middle | 25 (64.1)           | 11 (28.2)    | 3 (7.7)      |          |         |

\*Statistically significant ( $p < 0.05$ ).

## DISCUSSION

The current research measured the socio-demographic profile, clinical features, and the risk factors in 158 patients with head and neck cancers who visited the oncology OPD of Government Medical College, Mahasamund, Chhattisgarh. The results indicate predominance of middle-aged males, close association with tobacco-related behavior and that most of the cases were late in presentation. These findings support the risk patterns of head and neck cancers existing in India as well as illuminating the unique situation of the populations in semi-urban and rural locations. The average age at diagnosis was 50.2 years in the present study with the majority of the disease burden falling on the 40-59 year age group. This is in line with the past research that head and neck cancers are predominant during the fifth and sixth decades of life and this is attributed to the cumulative exposure to carcinogens like tobacco and alcohol among others.<sup>[11,12]</sup> It is particularly notable that the percentage of cases in patients under 40 years old was 13 percent, which reflects the growing tendency of developing the disease at earlier age, and may be associated with greater consumption of smokeless tobacco and areca nut products at younger ages. The predominance was found to be male (71.5%) as it is in global and national epidemiological data. The sex gap is mostly explained by more prevalence of risk factors, including smoking, alcohol use, and work exposures of men, but also to increased prevalence among

women in other parts of the world, with respect to smokeless tobacco and indoor exposure to smoke.<sup>[13]</sup> Socio-demographic analysis showed that most of the patients were married, literate and in the lower socioeconomic group. This distribution is based on the demography of the catchment area that the institution serves. The local population is reflected by the proportion of Hindu patients (97.5%). Notably, low socioeconomic status was also highly expressed, which underscores the impact of poverty on late presentation, poor awareness, and resistance to early diagnosis and adherence to treatment.<sup>[14]</sup> Less fortunate patients usually put off their health care, use traditional medicine or are unable to afford quick assessment, thus showing up with advanced disease. The commonest location (50.6%) was carcinoma of the buccal mucosa, and carcinoma of the tongue (25.3%). The prevalence of smokeless tobacco and gudakhu use is high in this area and this distribution is reflected in this site. Buccal mucosa and tongue cancers were directly linked to oral submucosal exposure to carcinogens, and were responsible in this study of almost three-fourths of the cases. The same results have been presented in other states of India where smokeless tobacco chewing is common.<sup>[15,16]</sup> Other less frequent locations were also detected including lip, alveolus, gingivobuccal sulcus and floor of the mouth and cancers at the nasopharyngeal and pyriform fossa were infrequent. Laterality analysis revealed that left-sided lesions were predominant which can be attributed to the habitual positioning of quid on a single side of the oral cavity which has been recorded in the past literature.

The most common presenting symptom was a non-healing ulcer (57.5%), and whitish patches (11.3%) and pain (12.6%). Initial complaints were more of loosening of teeth, verrucous masses, and difficulty in opening the mouth. These are the standard initial symptoms of cancers of the mouth. Nevertheless, a considerable number of the patients disregarded the initial lesions as a part of benign oral conditions, which was likely one of the reasons why they appeared at a late stage.

This observation highlights the necessity of having public health campaigns to sensitize individuals on the early signs of oral cancer. Most patients were noted to have multiple risk behaviors with combined use of smoking, alcohol, and gudakhu most prevalent (40.5%) one. A local smokeless tobacco paste, gudakhu, became one of the significant contributors, and 26.5% of patients used it only.<sup>[17]</sup> This brings out the importance of region-specific exposures of carcinogens. The interaction of alcohol and tobacco was synergistic, which is in line with the well-reported results worldwide. The number of patients who reported non-tobacco risk factors was only two, which means that behavioral modification programs aimed at tobacco cessation may have an immense effect among this population. The limitations of this research are that it is cross-sectional and thus it cannot be used to determine causality, and that it uses self-reported history of habits, thereby creating the possibility of recall bias. Moreover, the study was a hospital-based study and may not be entirely representative of the burden of disease in the community. This notwithstanding, the study gives good baseline information on how preventive measures can be planned and how cancer care can be better in this underserved area.

## CONCLUSION

It is concluded that head and neck cancers in this cohort predominantly affected middle-aged males belonging to lower socioeconomic backgrounds, with carcinoma of the buccal mucosa and tongue being the most common sites. The majority of patients presented with non-healing oral ulcers and had a strong history of tobacco use, particularly smokeless forms such as gudakhu, often in combination with smoking and alcohol. These findings emphasize the critical role of region-specific risk behaviors in the pathogenesis of head and neck cancers.

## REFERENCES

- Bangal, R. V., Giri, P. A., Bangal, S. V., More, M., & Singh, K. K. (2014). Socio-demographic profile and associated risk factors in cancer patients attending the Oncology OPD of a tertiary care teaching hospital in Western Maharashtra, India. *Int J Med Sci Public Heal*, 3(11), 1389-139.
- Dewangan, A. K., Patel, N., Dhuware, M. K., & Bhama, N. (2025). SOCIO DEMOGRAPHIC PROFILE AND ASSOCIATED RISK FACTORS IN CANCER PATIENTS ATTENDING THE ONCOLOGY OPD OF GOVERNMENT MEDICAL COLLEGE MAHASAMUND CHHATTISGARH. *International Journal of Medicine & Public Health*, 15(1).
- Emmanuel, J., & Kaur, S. (2024). Socio-demographic factors influencing head and neck cancer risk in rural Punjab: A hospital-based study. *International Journal of Oncology*, 6(1), 06-10.
- Singla, Anshul, Alok K. Goel, Simmi Oberoi, Shivani Jain, Deepak Singh, and Rakesh Kapoor. "Impact of demographic factors on delayed presentation of oral cancers: A questionnaire-based cross-sectional study from a rural cancer center." *Cancer Research, Statistics, and Treatment* 5, no. 1 (2022): 45-51.
- Jagannatha, G. V. (2005). Oral cancer prevalence and assessment of various risk factors among oral cancer patients attending kidwai memorial institute of oncology an epidemiological study (Master's thesis, Rajiv Gandhi University of Health Sciences (India)).
- Mohan, P. (2022). Assessment of the Feasibility of Opportunistic Screening for Oral Potentially Malignant Disorders and Oral Cancer at Dental Colleges in India: A Public Health Initiative from Bengaluru: a Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy, University of Canterbury Te Whare Wananga O Waitaha, Christchurch, New Zealand (Doctoral dissertation, University of Canterbury).
- Urmy, S. N. (2024). Socio-Demographic and Clinical Characteristics of Patients Attending Department of Palliative Medicine in Tertiary Care Hospital. *Glob Acad J Med Sci*, 6.
- Zubair, Usama Bin, and Humza Mumtaz. "Psychiatric morbidity and associated socio-demographic factors among the patients of head and neck tumors." *Pakistan Armed Forces Medical Journal* 69, no. 3 (2019).
- Deane, J., Norris, R., O'Hara, J., Patterson, J., & Sharp, L. (2022). Who presents where? a population-based analysis of socio-demographic inequalities in head and neck cancer patients' referral routes. *International Journal of Environmental Research and Public Health*, 19(24), 16723.
- Deupa, H., Chakraborty, A., Choudary, S., & Karnwal, R. (2025). Pilot Study on Early Signs, Symptoms and Nutritional Parameters among Head and Neck Cancer: A Prospective Study in Varanasi. *Indian Journal of Preventive & Social Medicine*, 56(3), 399-407.
- Koech, K. J. (2024). Pattern of presentation and some Risk factors of Oral Squamous Cell Carcinoma at Kenyatta National Hospital (Doctoral dissertation, JKUAT-COHES).
- Berege, G. Z. (2011). Predisposing factors and clinico-pathological presentation of malignant lesions of the oro-facial region among patients attending the Muhimbili National Hospital in Dar-es-Salaam, Tanzania (Doctoral dissertation, Muhimbili University of Health and Allied Science).
- Chumba, U. (2021). Patterns of Head and Neck Cancers as Seen at the Cancer Diseases Hospital in Lusaka, Zambia (Doctoral dissertation, University of Nairobi).
- Jaafar, Nik Ruzaynei Nik, Norhaliza Abd Hamid, Nur Amirah Hamdan, Mohd Afiffuddin Mohamad, Rama Krsna Rajandram, Raynuha Mahadevan, Mohd Razif Mohamad Yunus, and Mohammad Farris Iman Leong Bin Abdullah. "Head and Neck Cancer Survivors' Perceptions of Cancer Treatment and Posttraumatic Growth." *Malaysian Journal of Medicine & Health Sciences* 19, no. 5 (2023).
- Rodrigues-Oliveira, Leticia, Elisa Kauark-Fontes, Carolina Guimaraes Bonfim Alves, Juliana Ono Tonaki, Luiz Alcino Gueiros, Karina Moutinho, Gustavo Nader Marta et al. "COVID-19 impact on anxiety and depression in head and neck cancer patients: a cross-sectional study." *Oral Diseases* 28 (2022): 2391-2399.
- Bonzanini, Laura Izabel Lampert, Eloisa Barbieri Soldera, Gabriela Barbieri Ortigara, Rieli Elis Schulz, Jessica Klöckner Knorst, Thiago Machado Ardenghi, and Kivia Linhares Ferrazzo. "Effect of the sense of coherence and associated factors in the quality of life of head and neck cancer patients." *Brazilian oral research* 34 (2020): e009.
- Eyu, Hui Ting, Nik Ruzaynei Nik Jaafar, Mohammad Farris Iman Leong Abdullah, Hajar Mohd Salleh Salimi, Mohd Razif Mohamad Yunus, Fuad Ismail, Nur Fa'izah Ab Muin, and Noor Syazwani Abdul Aziz. "Perceived Shame and Stigma, and Other Psychosocial Predictors of Psychological Distress Among Cancer Patients in Malaysia." *Psycho-Oncology* 33, no. 12 (2024): e70020.