

Assessment of Quality of Life and Lifestyle-Related Risk Factors Among Head and Neck Cancer Patients Attending the Ear, Nose and Throat Out-patient Department

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Abstract:

Background: Head and neck cancer (HNC) is a major public health problem in India and is strongly associated with lifestyle-related risk factors that adversely affect patients' quality of life (QOL).

Aim: To assess the quality of life and lifestyle-related risk factors among head and neck cancer patients attending the Ear, Nose and Throat (ENT) Outpatient Department.

Methodology: A hospital-based descriptive cross-sectional observational study was conducted among 80 histopathologically confirmed HNC patients attending the ENT Department of Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, from Feb 2025 to January 2026. Data on socio-demographic characteristics, clinical profile, and lifestyle-related risk factors were collected using a structured questionnaire. Quality of life was assessed using the University of Washington Quality of Life (UW-QOL) questionnaire. Statistical analysis was performed using SPSS version 27.0, with $p < 0.05$ considered significant.

Results: Most participants were males (75.0%) aged 41–60 years (52.5%). Oral cavity cancer (42.5%) and advanced-stage disease (65.0%) predominated. Smokeless tobacco use (67.5%), smoking (57.5%), poor oral hygiene (55.0%), and alcohol consumption (47.5%) were common. The mean overall UW-QOL score was 63.6 ± 12.8 . Smoking, smokeless tobacco use, alcohol consumption, and poor oral hygiene were significantly associated with lower QOL scores ($p < 0.05$).

Conclusion: Head and neck cancer patients demonstrated moderate quality of life, with lifestyle-related risk factors significantly impairing well-being. Comprehensive management incorporating lifestyle modification, tobacco and alcohol cessation, oral health promotion, rehabilitation, and psychosocial support is essential to improve patient outcomes.

Keywords: Head and Neck Cancer, Quality of Life, UW-QOL, Lifestyle-Related Risk Factors, Tobacco, Alcohol, Oral Hygiene.

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Introduction

Head and neck cancers (HNCs) are malignant tumours of the upper aerodigestive tract (UAT) which include the oral cavity, nasopharynx, oropharynx and hypopharynx, and the larynx [1]. The high incidence, complex treatment, and impact on patients' physical, psychological and social health make these cancers a major public health challenge globally. They are responsible for about 4% of all cancers in developed countries like the United States while in the developing countries like India, they are responsible for nearly 30-40% of all cancer cases. Head and neck cancers are one of the most common cancerous

conditions in India with around 25% of the cancers in men, and 10% of cancers in women being of head and neck origin. The high burden is due to the high prevalence of tobacco use, in both smoked and smokeless forms, areca nut chewing, and excessive alcohol intake among the local population [2].

The etiology of head and neck cancers is a complex mix of factors including behavior, environment, infectious, nutritional, and genetic factors [3]. Tobacco is the number one risk factor due to the fact that it has over 30 known carcinogens such as polycyclic aromatic hydrocarbons and nitrosamines. Al-

cohol has a synergistic effect with tobacco and increases its harmful effects on cancer. Inadequate oral hygiene and oral disease are also recognized risk factors, especially in the populations that do not have easy access to oral health care. The role of viral infections in the pathogenesis of various head and neck cancers has been implicated, such as human papilloma virus (HPV), herpes simplex virus (HSV) and Epstein–Barr virus (EBV) [4]. Persistent irritation of the mucosa by chronic inflammatory conditions (gastroesophageal reflux disease) and dysplastic changes as in erythroplakia or leukoplakia also play a role in carcinogenesis.

In addition, wood dust and coal dust, and some organic chemicals, have been linked to an elevated risk of cancers of the head and neck area [5]. Nutrition is a major factor – diets with high intakes of red meat and salted meat are associated with an increased risk while diets with high intakes of fruits and vegetables are protective due to their high antioxidant content and vitamin A, C and E. Additionally, inherited genetic syndromes (Li-Fraumeni syndrome, Fanconi's anemia, Bloom syndrome and ataxia-telangiectasia) increase susceptibility to malignancy [6]. Carcinogen metabolism and DNA repair mechanisms are also affected by genetic polymorphisms of GST genes, CYP genes and the cytochrome P450 enzyme system, which can affect susceptibility [7].

There is a regional variation in the epidemiological distribution of head and neck cancers in India [8]. The Cancer Atlas Project, Indian Council for Medical Research (ICMR) has revealed that northeastern states of Assam, Manipur, Mizoram, Tripura and Nagaland have high occurrences of cancer. In the country, the incidence of the lower pharynx and tongue cancers is the highest in Mizoram in males, while Pondicherry reports high incidence of oral cancers in males and Nagaland has the highest incidence of nasopharyngeal cancer in the country [9]. The regional variation shows the impact of lifestyle practice, environmental exposures, sociocultural influences on the occurrence of disease.

Despite the progress toward diagnosis and multimodal treatment, patients still have many physical and psychosocial problems. While surgical treatment often results in facial disfigurement, dysphagia, dysphonia and reduced airway function, radiotherapy and chemotherapy frequently cause xerostomia, mucositis, dysgeusia, fatigue and nutritional deficiencies. These complications have a negative impact on functioning in daily life, adherence to treatment and quality of life (QoL) [10]. The focus today in cancer care is on long-term survival combined with maintaining as much independence and as good a quality of life as possible.

Quality of life is defined by the World Health Organization as an individual's perception of their position in life in the context of the culture and value

system that they live within and with respect to their goals, expectations, standards and concerns. In the same way, the Calman gap theory is a gap between people's expectations and their own experiences, in relation to quality of life. Head and neck cancer patients may have poor quality of life due to morbidity associated with disease and side effects of therapy. Providing a patient with feedback on quality of life can be useful in understanding their subjective experience, which can help healthcare providers maximize treatment strategies, alleviate symptoms, and tailor care to the individual patient. Treatment outcomes are the patient's perception of the effectiveness of the treatment, which is a crucial issue in healthcare evaluation, and thus, systematic measurement of health-related quality of life (HRQOL) has become a part of cancer treatment.

Behaviors that increase the risk of head and neck cancers also can affect treatment and long-term survival and quality of life, including smoking, drinking alcohol, eating, oral hygiene, and exposure to the workplace. Thus, the identification of quality of life and risk factors related to lifestyle among patients attending the Ear, Nose and Throat outpatient department is crucial for detecting vulnerable people, devising preventive action plans, reinforcing counseling for patients and enhancing overall cancer care. The present study aims to determine the quality of life and the risk factors associated with lifestyle of head and neck cancer patients visiting at the Ear, Nose and Throat Outpatient Department.

Methodology

Study Design: The study was a hospital-based, descriptive, cross-sectional observational study conducted to assess the quality of life and lifestyle-related risk factors among patients diagnosed with head and neck cancer attending the Ear, Nose and Throat (ENT) Outpatient Department.

Study Area: The study was conducted in the Department of ENT, Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, India.

Study Duration: The study was conducted over a period of one year, Feb 2025 to January 2026.

Study Participants

Inclusion Criteria

- Patients diagnosed with head and neck cancer attending the ENT Outpatient Department.
- Patients aged 18 years and above.
- Patients with histopathologically confirmed head and neck malignancy.
- Patients who were able to understand and respond to the study questionnaire.
- Patients who provided written informed consent to participate in the study.

Exclusion Criteria

- Patients with unconfirmed or suspected head and neck cancer.
- Patients who were critically ill or terminally ill and unable to participate in the interview.
- Patients with severe cognitive impairment or psychiatric illness that interfered with questionnaire completion.
- Patients who refused to provide informed consent.
- Patients with incomplete questionnaire responses or missing essential clinical information.

Sample Size: A total of 80 patients fulfilling the eligibility criteria were included in the study using a convenient sampling technique during the study period.

Procedure: Prior to the commencement of the study, ethical approval was obtained from the Institutional Ethics Committee of Lord Buddha Koshi Medical College and Hospital, Saharsa. Eligible patients attending the ENT Outpatient Department during the study period were enrolled consecutively after explaining the objectives of the study and obtaining written informed consent. Baseline demographic details, including age, gender, marital status, educational status, occupation, residence, and socioeconomic status, were collected using a structured proforma. Clinical information such as the site of head and neck cancer, disease stage, duration since diagnosis, treatment status, and associated comorbidities was obtained from patients' medical records and clinical evaluation.

Lifestyle-related risk factors were assessed using a predesigned and pretested questionnaire. Information regarding tobacco smoking, smokeless tobacco use, alcohol consumption, dietary habits, physical activity, and oral hygiene practices was recorded. Quality of life was assessed using the University of Washington Quality of Life Questionnaire (UW-QOL), which evaluated domains including

pain, appearance, swallowing, chewing, speech, taste, saliva, mood, anxiety, activity, recreation, shoulder function, and overall quality of life. Participants completed the questionnaire with assistance from the investigator whenever required. The collected data were checked for completeness, coded, entered into Microsoft Excel, and subsequently transferred for statistical analysis. Confidentiality of all participants was maintained throughout the study by assigning unique identification numbers.

Statistical Analysis: The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were summarized as mean and standard deviation (SD), whereas categorical variables were expressed as frequencies and percentages. Associations between quality-of-life scores and lifestyle-related risk factors were assessed using appropriate statistical tests such as the Chi-square test, independent *t*-test, or one-way analysis of variance (ANOVA), wherever applicable. A *p*-value of <0.05 was considered statistically significant.

Result

Table 1 presents the socio-demographic characteristics of the 80 study participants. The majority of participants (52.5%) were aged 41–60 years, followed by those aged >60 years (25.0%) and 18–40 years (22.5%). Males constituted three-fourths of the study population (75.0%), while females accounted for 25.0%. Most participants were married (82.5%), with smaller proportions being unmarried (12.5%) or widowed/divorced (5.0%). A greater proportion of participants resided in rural areas (65.0%) compared to urban areas (35.0%). Regarding educational status, 30.0% were illiterate, 27.5% had secondary education, 22.5% had primary education, and 20.0% were graduates or had higher qualifications, indicating a predominantly rural and moderately educated study population.

Table 1: Socio-demographic Characteristics of the Study Participants (n = 80)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–40	18	22.5
	41–60	42	52.5
	>60	20	25
Gender	Male	60	75
	Female	20	25
Marital Status	Married	66	82.5
	Unmarried	10	12.5
	Widowed/Divorced	4	5
Residence	Rural	52	65
	Urban	28	35
Education	Illiterate	24	30
	Primary	18	22.5
	Secondary	22	27.5
	Graduate & Above	16	20

Table 2 presents the clinical characteristics of the 80 head and neck cancer patients included in the study. The oral cavity was the most common primary site of cancer (42.5%), followed by the larynx (22.5%), pharynx (20.0%), nasopharynx (8.8%), and other sites (6.2%). Regarding disease stage, equal proportions of patients were diagnosed with Stage III and Stage IV cancers (32.5% each), while 22.5% and

12.5% had Stage II and Stage I disease, respectively. Combined therapy was the most common treatment modality (32.5%), followed by radiotherapy (27.5%), surgery (22.5%), and chemotherapy (17.5%). Comorbidities were present in 37.5% of patients, whereas the majority (62.5%) had no associated comorbid conditions.

Table 2: Clinical Characteristics of Head and Neck Cancer Patients (n = 80)			
Variable	Category	Frequency (n)	Percentage (%)
Primary Site of Cancer	Oral cavity	34	42.5
	Larynx	18	22.5
	Pharynx	16	20
	Nasopharynx	7	8.8
	Others	5	6.2
Cancer Stage	Stage I	10	12.5
	Stage II	18	22.5
	Stage III	26	32.5
	Stage IV	26	32.5
Treatment Status	Surgery	18	22.5
	Radiotherapy	22	27.5
	Chemotherapy	14	17.5
	Combined therapy	26	32.5
Comorbidities	Present	30	37.5
	Absent	50	62.5

Table 3 presents the distribution of lifestyle-related risk factors among the 80 study participants. Smokeless tobacco use was the most common risk factor, reported by 67.5% of participants, followed by tobacco smoking (57.5%) and poor oral hygiene (55.0%). Nearly half of the participants (47.5%) reported alcohol consumption, while 52.5% did not

consume alcohol. Low physical activity was observed in 45.0% of participants, whereas 55.0% reported adequate physical activity. Overall, the findings indicate a high prevalence of modifiable lifestyle-related risk factors, particularly tobacco use and poor oral hygiene, among patients with head and neck cancer.

Table 3: Distribution of Lifestyle-Related Risk Factors Among Participants (n = 80)			
Lifestyle Risk Factor	Category	Frequency (n)	Percentage (%)
Tobacco Smoking	Yes	46	57.5
	No	34	42.5
Smokeless Tobacco Use	Yes	54	67.5
	No	26	32.5
Alcohol Consumption	Yes	38	47.5
	No	42	52.5
Poor Oral Hygiene	Yes	44	55
	No	36	45
Low Physical Activity	Yes	36	45
	No	44	55

Table 4 presents the quality of life (UW-QOL) domain scores among the 80 study participants. The overall mean UW-QOL score was 63.6 ± 12.8 , indicating a moderate level of quality of life. Among the individual domains, shoulder function had the highest mean score (71.2 ± 16.4), followed by mood (69.8 ± 15.2), appearance (68.5 ± 17.4), and speech (66.2 ± 16.8), reflecting relatively better functioning

in these areas. Lower mean scores were observed for chewing (55.9 ± 21.5), saliva (57.1 ± 20.8), and swallowing (58.7 ± 19.3), suggesting greater impairment in these functions. Pain, taste, anxiety, activity, and recreation showed intermediate scores, indicating varying degrees of functional limitation among the participants.

Table 4: Quality of Life (UW-QOL) Domain Scores Among Study Participants (n = 80)	
Domain	Mean $\pm$ SD
Pain	63.8 $\pm$ 18.6
Appearance	68.5 $\pm$ 17.4
Swallowing	58.7 $\pm$ 19.3
Chewing	55.9 $\pm$ 21.5
Speech	66.2 $\pm$ 16.8
Taste	60.4 $\pm$ 18.7
Saliva	57.1 $\pm$ 20.8
Mood	69.8 $\pm$ 15.2
Anxiety	64.3 $\pm$ 17.1
Activity	61.6 $\pm$ 18.5
Recreation	59.8 $\pm$ 18.2
Shoulder Function	71.2 $\pm$ 16.4
Overall UW-QOL Score	63.6 $\pm$ 12.8

Table 5 presents the association between lifestyle-related risk factors and the overall University of Washington Quality of Life (UW-QOL) score among the 80 study participants. Participants who smoked had a significantly lower mean UW-QOL score than non-smokers (59.4 $\pm$ 11.8 vs. 69.2 $\pm$ 10.6; $p=0.003$). Similarly, smokeless tobacco users had significantly poorer quality of life compared to non-users (60.5 $\pm$ 12.4 vs. 70.1 $\pm$ 11.3; $p=0.012$). Alcohol

consumers also demonstrated significantly lower mean UW-QOL scores than non-consumers (58.9 $\pm$ 11.7 vs. 67.8 $\pm$ 12.2; $p=0.005$). Participants with poor oral hygiene had significantly reduced quality of life (59.8 $\pm$ 11.5) compared with those maintaining good oral hygiene (68.2 $\pm$ 12.4; $p=0.009$), indicating that these lifestyle-related risk factors were significantly associated with poorer quality of life.

Table 5: Association Between Lifestyle-Related Risk Factors and Overall Quality of Life (UW-QOL) Score (n = 80)			
Variable	n	Mean UW-QOL Score ± SD	p-value
Smoking			
Yes	46	59.4 ± 11.8	0.003
No	34	69.2 ± 10.6	
Smokeless Tobacco Use			
Yes	54	60.5 ± 12.4	0.012
No	26	70.1 ± 11.3	
Alcohol Consumption			
Yes	38	58.9 ± 11.7	0.005
No	42	67.8 ± 12.2	
Poor Oral Hygiene			
Yes	44	59.8 ± 11.5	0.009
No	36	68.2 ± 12.4	

Discussion

This present study aimed to evaluate the quality of life (QOL) and lifestyle related risk factors of head and neck cancer (HNC) patients who attended the ENT clinic as outpatients. The results showed that HNC mainly attacked middle-aged and elderly people, with the 41–60-year-old age group comprising of 52.5% of the patients while the age group above 60 years made up 25.0% of the patients. The same has been described by Gomes et al. (2020) [11] who reported a mean age of 63.4 years for the patients, which suggests that HNC is an older adult disease. In a similar study, Rogers (2009) [12] noted that most HNC patients were diagnosed in their 50s or 60s and this was attributed to the cumulative effect of long-term exposure to carcinogenic risk factors

like tobacco and alcohol. The present study found 75.0 % males being affected, which was in line with Gomes and colleagues [13] (69.7 % males) and Joshi et al. (2014) [14] who also reported a higher disease burden in males due to higher exposure to tobacco and alcohol among males. Additionally, the majority of residents in the area were rural residents (65.0%) and had less than a high school degree (56.7%), further emphasizing socioeconomic disparities which could contribute to delayed diagnosis, and limited knowledge of preventive health practices.

As regards the clinical characteristics, the predominant primary site was the oral cavity (42.5%), the larynx (22.5%) and the pharynx (20.0%). The study results obtained are similar to that of Prabhash et al. (2020) [14] which pointed out that oral cavity ma-

lignancies are the most common subtype of HNC in India due to the high prevalence of smokeless tobacco use. In addition, 65.0% of the current patients had stage III or IV disease, indicating late use of health care services. Joshi et al. (2014) reported that almost two thirds of HNC patients in India presented at an advanced stage of disease, which led to more aggressive treatment, and poorer functional outcomes. Similarly, the majority of treatment modalities in the present study were combined treatments (32.5%), highlighting the need for multimodal treatment of advanced-stage disease.

Participants had many lifestyle-related risk factors. Sixty-seven.5% of patients used smokeless tobacco, 57.5% smoked tobacco, 55.0% had poor oral hygiene, and 47.5% drank alcohol. This research aligns with the well documented association between tobacco and alcohol use and the development and progression of head and neck cancers. Vigneswaran and Williams (2014) [15] reiterated that tobacco and smokeless tobacco is the most important preventable etiological risk factor of OCC in South Asian population. Likewise, Prabhash et al. (2020) found that the use of smokeless tobacco and smoking still constitute the bulk of HNC cases in India. Chronic oral inflammation is also seen to be prevalent in the present study which further indicates that oral inflammation may exacerbate disease severity and affect the treatment outcomes.

In the present study, the overall mean UW-QOL score was 63.6 ± 12.8 , which suggests a moderate UW-QOL of patients with HNC. Gomes et al. (2020) reported moderate scores for a variety of QOL assessment instruments for patients undergoing treatment for head and neck cancers. Considerable variation was seen across the various domains with relatively higher scores for shoulder function, mood, appearance, and speech, while the scores for chewing, saliva, and swallowing were the lowest. Chewing, swallowing, and speech were also reported by Rogers et al., 2002 [16] as the most important and most affected domains among those who were treated for OCC. The results are similar to each other indicating that oral functional impairment is one of the most significant factors reducing quality of life regardless of treatment modality.

The very low chewing and swallowing scores recorded in the present study are not surprising as tumors in the oral cavity and pharynx directly disrupt the processes of chewing and swallowing, and the surgical and radiation therapies recorded in the present study will also have a detrimental effect on these functions. Braam et al. (2007) [17] reported that about 40% of long-term survivors had permanent xerostomia following radiotherapy, which greatly limited their swallowing capacity and oral comfort. Likewise, the lower saliva scores in the present study are consistent with these observations, indicating that salivary dysfunction continues to be a

major contributor to poor nutritional status and decreased quality of life following treatment.

The major advantage of the current study is the significant links it has shown between lifestyle related risk factors and overall quality of life. Smokers scored significantly lower on the UW-QOL compared to non-smokers (59.4 vs. 69.2; $p=0.003$), and the smokeless tobacco users scored lower than the non-smokers (60.5 vs. 70.1; $p=0.012$). Likewise, the scores of alcohol consumers were significantly lower than those of non-consumers (58.9 vs. 67.8; $p=0.005$). The results are similar to those of Rogers (2009), who found that smoking and drinking alcohol after diagnosis are associated with poorer symptom burden, treatment response, and long-term quality of life outcomes. Exposure to these risk factors can result in delayed healing of tissues, complications from treatment and decreased physical and psychosocial function.

The other significant observation of the present study was the significant relation between oral hygiene and quality of life. There was a significant difference in the UW-QOL scores between patients with poor oral hygiene and those with good oral hygiene (59.8 vs. 68.2; $p=0.009$). While this relationship has not been directly investigated in numerous studies, Bhattacharjee et al. (2015) [18] found that patients with HNC who had good oral health and nutritional status demonstrated higher tolerability to treatment and overall health. Based on the results of the present study, therefore, the role of oral hygiene in comprehensive supportive care is highlighted.

The overall results of the present studies corroborate previous studies that have linked quality of life in head and neck cancer patients with tumor characteristics, treatment-related factors, and modifiable lifestyle behaviors. The widespread tobacco use, alcohol abuse, low levels of oral hygiene, and low levels of physical activity seen in this study suggest multiple treatment modalities are necessary and would benefit from integrating tobacco and alcohol cessation services, oral health education, nutrition counseling, psychological counseling, and structured rehabilitation. Concurrently with regular oncological therapy, correcting these modifiable factors can significantly improve functional recovery, decrease symptom burden and improve overall quality of life for HNC patients.

Conclusion

The present study concludes that head and neck cancer predominantly affects middle-aged males from rural backgrounds and is frequently diagnosed at advanced stages, with the oral cavity being the most common site of involvement. A high prevalence of modifiable lifestyle-related risk factors, particularly smokeless tobacco use, smoking, alcohol consumption, and poor oral hygiene, was observed among the patients. Overall quality of life was moderate, with

the greatest impairments noted in chewing, swallowing, and salivary function, reflecting the substantial functional burden of the disease and its treatment. Furthermore, tobacco use, alcohol consumption, and poor oral hygiene were significantly associated with lower quality-of-life scores, highlighting their adverse impact on patient well-being. These findings emphasize the need for comprehensive cancer care that integrates early detection, lifestyle modification, tobacco and alcohol cessation, oral health promotion, nutritional support, rehabilitation, and psychosocial counseling to improve treatment outcomes and enhance the overall quality of life of patients with head and neck cancer.

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