KNOWLEDGE AND AWARENESS OF ORAL CANCER AMONG PATIENTS AT A TERTIARY DENTAL CARE CENTER IN NEPAL

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ABSTRACT

INTRODUCTION

Awareness of etiology and clinical presentation of oral cancer among general population would help in the early detection of oral cancer and a favorable outcome for the patients. The aim of the present study was to assess the awareness regarding oral cancer among patients of a tertiary dental care center.

MATERIAL AND METHODS

A cross-sectional descriptive survey was conducted among patients of a tertiary dental care center in Nepal, using a self-administered questionnaire to assess the awareness related to risk factors, clinical presentation, and treatment options. Descriptive statistics was used to review the data and percentage of patients answering to various options in questions. Association between variables was measured by chi-square test. A p-value of < 0.05 was considered significant.

RESULTS

A total of 400 dental patients responded to the questionnaire. Awareness of tobacco as a risk factor was high (82%), while knowledge of alcohol (10%), HPV (10%), and poor oral hygiene (8%) as risks was limited. About 70% recognized early signs, such as white or red patches, but only 15% knew how to perform oral self-examination. Awareness significantly differed by residence, education, and occupation ($p < 0.05$).

CONCLUSION

The study highlighted moderate awareness of oral cancer among participants, with notable variations across rural and urban populations, educational backgrounds, and occupational groups. While a majority recognize the importance of early detection and the potential for oral cancer to affect younger individuals, significant misconceptions persist, particularly regarding its familial tendency and contagious nature.

KEYWORDS

Awareness, Knowledge, Oral Cancer, Prevalence

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INTRODUCTION

Oral cancer is a major public health concern, particularly in South Asian countries like Nepal, where tobacco and alcohol consumption are prevalent.[1] It is the sixth most common cancer worldwide, with a high mortality rate due to late diagnosis and lack of awareness.[2] The disease primarily affects the lips, tongue, floor of the mouth, and other oral structures, often progressing from potentially malignant disorders such as leukoplakia and erythroplakia.[3]

In Nepal, the burden of oral cancer is increasing due to risk factors such as smoking, betel quid chewing, poor oral hygiene, and human papillomavirus (HPV) infection.[4] A lack of awareness about early signs and symptoms, coupled with limited access to specialized healthcare, contributes to delayed diagnosis and poor prognosis.[5] Despite efforts by healthcare institutions, many patients remain unaware of oral cancer risks, preventive measures, and the importance of early detection.[6]

While previous studies have assessed oral cancer awareness in the general Nepalese population, there is limited data focusing specifically on patients attending tertiary dental care centers. Tertiary dental care centers play a crucial role in diagnosing and managing oral cancer. However, understanding the level of knowledge and awareness among patients attending these centers is essential for developing targeted educational and preventive strategies.[7] This study targets to evaluate the awareness of oral cancer among patients at a tertiary dental care center in Nepal to recognize gaps and improve public health interventions.

MATERIAL AND METHODS

Study design

This cross-sectional design survey was conducted to assess the knowledge and awareness of oral cancer among patients appearing at Medical College in Nepal. A quantitative approach was used to analyze the level of awareness, knowledge of risk factors, and attitudes toward early detection and prevention of oral cancer.

Study setting

The study was conducted at the outpatient department of a tertiary dental care center in Nepal, which provides specialized dental services, including oral pathology, oncology referrals, and preventive programs. The center provides to a various group of patients from both urban and rural backgrounds, making it a perfect setting for evaluating oral cancer awareness.

Study population

The study targeted adult patients attending the dental outpatient department (OPD). Both new and follow-up patients were enrolled to provide a comprehensive assessment of awareness levels regarding oral cancer.

Sampling method and sample size

A convenience sampling technique was used to recruit participants due to feasibility constraints. The sample size was calculated using Cochran's formula for cross-sectional studies, Where, Z = 1.96 (for 95% confidence level), p = estimated prevalence of awareness (assumed 50% for maximum sample size), and d = 0.05 (margin of error). This yielded a minimum sample size of 384 participants. To account for potential non-responses, 10% was added, resulting in a final sample size of approximately 422. Ultimately, 400 participants completed the survey.

Inclusion criteria

- Patients aged 18 years and above.
- Patients attending the dental OPD for consultation or treatment.
- Patients able to understand and communicate in Nepali or English.
- Patients who provided informed consent to participate.

Exclusion criteria

- Patients with a prior history of oral cancer, as their awareness might be influenced by prior diagnosis.
- Patients unable to respond due to intellectual or physical impairments.
- Patients who declined to participate.

Data collection tool

A Pre-Tested (30 patients) and validated structured questionnaire was used to assess knowledge and awareness of oral cancer. The questionnaire was taken from the previous study.[8] Necessary modifications were made based on feedback before final implementation. The internal consistency of the questionnaire was evaluated using Cronbach's alpha, which yielded a value of 0.82, indicating good reliability.

Questionnaire structure

Demographic Information: Age, gender, education level, occupation, residence (urban/rural), and history of tobacco or alcohol use.

Knowledge of oral cancer: Awareness of oral cancer, knowledge of risk factors (tobacco, alcohol, HPV, poor oral hygiene), common symptoms (non-healing ulcers, red/white patches, difficulty swallowing), and awareness of preventive measures.

Data collection procedure

Participants were approached in the dental OPD by trained researchers. The study's purpose, procedures, and confidentiality policies will be explained, and informed consent will be obtained.

The questionnaire will be self-administered for literate participants and interviewer-assisted for those with literacy difficulties. Each participant will take approximately 10–15 minutes to complete the survey. Completed questionnaires will be collected and checked for completeness before data entry.

Data management and analysis

Data were entered and analyzed using SPSS version 25. Frequencies and percentages will be used to summarize demographic characteristics and levels of awareness. Mean and standard deviation (SD) calculated for contins variables.

Chi-square tests (χ^2) was used to determine associations between demographic factors and awareness levels. A *p*-value of <0.05 was considered statistically significant.

Ethical considerations

Ethical approval was obtained from the Institutional Review Committee (IRC) of the Chitwan Medical College before conducting the study (CMC-IRC/081/082-006). Participants were informed about the voluntary nature of participation and assured of confidentiality. Informed consent (written) was obtained from all participants.

The use of convenience sampling may introduce selection bias. Self-reported data may lead to social desirability bias. The study is conducted in one tertiary center, limiting the generalizability of findings to the broader Nepalese population.

RESULTS

Demographic details

A total of 400 patients participated, comprising 190 (47.5%) males and 210 (52.5%) females, with ages ranging from 18 to 75 years (mean ± SD: 39.2 ± 13.5 years). Among them, 260 (65%) were from rural areas and 140 (35%) from urban areas. Educational levels varied: 17 (4.3%) were illiterate, 30 (7.5%) had primary education, 139 (34.8%) were graduates, and 84 (21%) were postgraduates. Occupational groups included professionals (130, 32.5%), housewives (80, 20%), students (50, 12.5%), unemployed (11, 2.8%), and others (table 1).

Table 1. Participants' responses to various questions in the survey questionnaire

S. no.	Question	Response (Yes)	Response (Yes)
1.	Do you think cancer may occur individuals without deleterious habits?	290	110
2.	Does cancer show a familial tendency?	129	271
3.	Can chronic nonhealing ulcers due to sharp tooth, broken tooth or broken teeth set lead to cancer?	221	179
4.	Do you know that some white or red patches may develop in mouth before oral cancer?	280	120
5.	Initial lesions of oral cancer could be painless	335	65
6.	Do you think cancer from other organs or sites can spread into mouth?	234	166
7.	Do you think cancer can affect jaw bones?	251	149
8.	Do you know to self-examine your mouth?	60	340
9.	Do you perform self-examination of your mouth?	101	299
10.	Do you think self-examination of mouth has role in prevention and early diagnosis of oral cancer?	306	94
11.	Is oral cancer a disease that can affect younger individuals (< 40years) also?	331	69
12.	Do you think early detection of oral cancer gives a better survival outcome?	371	29
13.	Can some viruses cause oral cancer?	302	98
14.	Is oral cancer a contagious disease?	178	222

Awareness of oral cancer

Most participants (82%) correctly identified tobacco smoking and chewing as risk factors for oral cancer, while fewer recognized alcohol (10%), human papillomavirus (HPV) infection (10%), and poor oral hygiene (8%) as risk factors (figure 1). Awareness of early signs such as white or red patches in the mouth was reported by 70% of respondents. Common symptoms recognized included difficulty or pain during chewing or swallowing (30%), abnormal lumps (40%), non-healing ulcers lasting more than three weeks (25%), and white, red, or black patches (20%). The tongue (50%), cheeks (35%), lips (10%), and palate (5%) were identified as commonly affected sites (figure 3).

Socio-demographic associations with Awareness

As shown in table 2, urban participants demonstrated significantly higher awareness regarding the familial tendency of oral cancer (42.9% vs. 26.5%, p=0.02) and the metastatic spread of cancer from other organs to the mouth (71.4% vs. 51.5%, p=0.01) compared to rural participants. Knowledge of Mouth Self Examination (MSE) was also higher among urban residents (20.7%) than rural (11.9%) (p=0.03). Educational level was strongly associated with oral cancer awareness (table 3); for instance, 61% of graduates and 77% of postgraduates recognized familial cancer tendencies versus 35% of those with primary education or less (p<0.001).

Table 2. Responses that showed significant differences in oral cancer awareness between urban and rural participants (significant at *p*-value < 0.05)

S. no.	Question	Rural (260)	Urban (140)	*p*-value
1	Does cancer show a familial tendency?		0.001*	
	Yes	69	60	
	No	191	80	
2	Do you think cancer from other organs or sites can spread into mouth?			0.000*
	Yes	134	100	
	No	126	40	
3	Do you know to self-examine your mouth?			0.027*
	Yes	31	29	
	No	229	111	
4	Do you think early detection of oral cancer gives a better survival outcome?			0.079
	Yes	240	131	
	No	20	09	

Table 3. Association between oral cancer awareness and education status of participants.

Sl. no.	Questions	Illiterate (17)	Primary school (30)	High school (130)	Graduate/ Degree (139)	Postgraduate (84)	*p*-Value
1	Does cancer show a familial tendency?						0.000*
	Yes	6	9	22	51	41	
	No	11	21	108	88	43	
2	Do you know that some white or red patches may develop in mouth before oral cancer?						0.255
	Yes	9	22	91	93	65	
	No	8	8	39	46	19	
3	Initial lesions of oral cancer could be painless						0.013*
	Yes	12	20	106	122	75	
	No	5	10	24	17	09	
4	Do you think cancer can affect jaw bones?						0.000*
	Yes	11	17	64	117	52	
	No	6	13	66	22	32	
5	Is Oral cancer a disease that can affect younger individuals (< 40 years) also?						0.001*
	Yes	9	21	107	123	71	
	No	8	9	23	16	13	
6	Do you think early detection of oral cancer gives a better survival outcome?						0.000*
	Yes	6	24	125	133	83	
	No	11	6	5	6	1	

Occupational variation in awareness

Table 4 details awareness differences across occupational groups. Professionals showed the highest awareness of oral

cancer risk and early signs, with 70% reporting knowledge of MSE, compared to only 15% among students and unemployed participants. Housewives exhibited the highest misconception regarding oral cancer being contagious (43%), significantly higher than other groups (p<0.001)

Table 4. Association between oral cancer awareness and employment of participants

Sl. no.	Questions	Professional/ Office job (215)	Self-employed (50)	Daily wages job (22)	House wife (58)	Student (40)	Unemployed (15)	*p*-value
1	Does cancer show a familial tendency?							0.000*
	Yes	85	9	2	10	19	4	
	No	130	41	20	48	21	11	
2	Do you think cancer can affect jaw bones?							0.022*
	Yes	121	31	18	39	29	13	
	No	94	19	4	19	11	2	
3	Do you know to self-examine your mouth?							0.257
	Yes	30	11	5	10	2	2	
	No	185	39	17	48	38	13	
4	Do you think self-examination of mouth has role in prevention and early diagnosis of oral cancer?							0.001*
	Yes	180	33	18	35	31	9	
	No	35	17	4	23	9	6	
5	Is Oral cancer a disease that can affect younger individuals (< 40 years) also?							0.055
	Yes	190	39	16	45	30	11	
	No	25	11	6	13	10	4	
6	Do you think early detection of oral cancer gives a better survival outcome?							0.310
	Yes	204	46	19	51	38	13	
	No	11	4	3	7	2	2	
7	Is oral cancer a contagious disease?							0.000*
	Yes	66	22	18	43	18	11	
	No	149	28	4	15	22	4	

Figure 1, demonstrated the Participants reported several oral cancer risk factors, including tobacco use (82%), excessive tea consumption (20%), nutritional deficiencies (15%), and viral infections (10%).

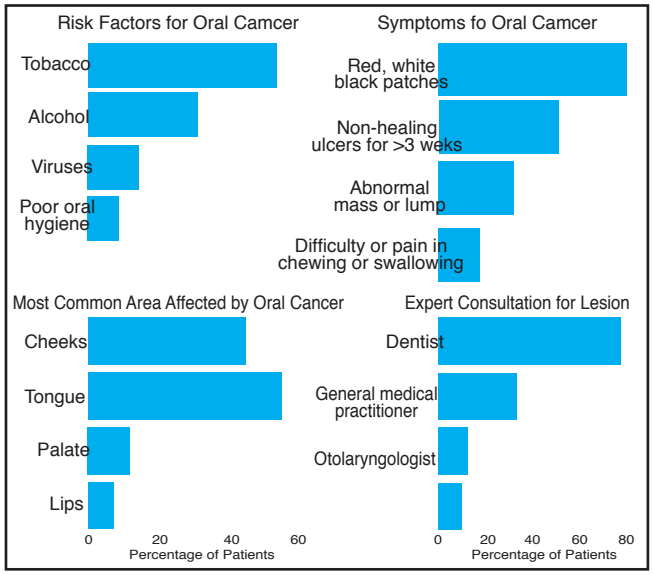

Figure 1. Patient's responses to questions on various domains of oral cancer

Common symptoms recognized included difficulty or pain during chewing or swallowing (30%), abnormal lumps (40%), non-healing ulcers lasting more than three weeks (25%), and white, red, or black patches (20%). The tongue (50%), cheeks (35%), lips (10%), and palate (5%) were identified as commonly affected sites. For expert consultation, 65% of participants preferred dentists, 20% otolaryngologists, and 15% general medical practitioners for oral lesions.

DISCUSSION

The survey results provide valuable insights into participants' knowledge and perceptions of oral cancer. A significant majority (72.5%) believe that oral cancer can occur in individuals without harmful habits, consistent with previous studies indicating awareness beyond high-risk behavior.[9] However, only 32.25% recognize a familial tendency to cancer, which is lower than expected given the known genetic predisposition.[2] Awareness of early signs such as white or red patches in the mouth was reported by 70%, aligning with findings from similar research.[10] Despite this, only 15% knew how to perform MSE, and just 25.25% reported doing it, highlighting a practical knowledge gap in early detectio.[11] Additionally, 44.5% believed oral cancer is contagious, reflecting a common misconception found in other studies.[12] On a positive note, 75.5% were aware that certain viruses, like HPV, can cause oral cancer, demonstrating good awareness of viral risk factors.[13]

Comparing rural and urban participants revealed significant differences: 26.5% of rural respondents acknowledged a familial cancer tendency versus 42.9% of urban participants, suggesting greater recognition of genetic risks in urban areas.[14] Regarding metastasis, 71.4% of urban and 51.5% of rural participants believed oral cancer could spread from other organs, reflecting better knowledge among urban dwellers.[15] MSE knowledge was low in both groups but higher in urban participants (20.7% vs. 11.9% rural), reinforcing the need for expanded educational outreach.[16] Encouragingly, over 90% in both rural (92.3%) and urban (93.6%) groups agreed that early detection improves survival outcomes, consistent with global evidence on the importance of timely diagnosis.[17]

Educational level strongly influenced awareness: more participants with higher education recognized familial cancer tendencies compared to those less educated (illiterate 6/17, primary education 9/30). This pattern mirrors findings that associate education with increased genetic risk awareness.[18] Similarly, our findings are in line with previous research showing that people with higher levels of education are generally more aware of the early warning signs of oral cancer. Studies from Yemen and Nepal have reported that individuals with college-level education are more likely to recognize early, often painless lesions and understand the common risk factors.[19,20] Likewise, a recent study from Singapore found that university students, particularly those in health-related programs had substantially better awareness of early symptoms and a clearer understanding of how early detection can improve survival.[21] These parallels suggest that education plays an important role in shaping awareness and encouraging timely health-seeking behavior, which supports the trends observed in our study.

Occupational groups showed significant variation: professionals and self-employed individuals largely dismissed familial cancer tendency, often focusing more on lifestyle factors.[22] However, knowledge of MSE was low, especially among students and unemployed individuals, highlighting a widespread lack of awareness despite MSE's role in early detection.[23,24] Most respondents acknowledged the importance of self-examination for prevention and early diagnosis, supporting existing recommendations for routine screening in clinical practice.[25] The belief that oral cancer can affect younger individuals was prevalent, reflecting

global trends associating lifestyle habits with increased cancer risk.[26] Nearly all participants agreed early detection improves survival, consistent with evidence showing better outcomes with early-stage diagnosis.[27] Nevertheless, misconceptions persisted, about 15.9% of respondents believed that oral cancer is contagious and reported social avoidance of patients.[28] These findings underline the urgent need for targeted educational campaigns to improve awareness, promote self-examination, and correct misconceptions.

Regarding risk factors, tobacco use was the most prevalent, affecting 82% of participants, corroborating Petersen's findings on tobacco's major role in oral carcinogenesis.[10] A meta-analysis by Warnakulasuriya2 similarly identifies tobacco as the primary risk factor in most oral cancer cases. Although evidence is inconclusive, 20% associated excessive tea consumption with oral cancer risk, as Khan et al.[22] suggest potential carcinogenic effects from high polyphenol content. Nutritional deficiencies, particularly in antioxidants such as vitamins A, C, and E (15%), were implicated as contributing factors, supported by Shiva A et al.'s work highlighting the protective effects of fruit- and vegetable-rich diets.[29] Poor oral hygiene, reported by 8%, is linked to increased risk due to chronic inflammation and bacterial colonization. Viral infections, notably HPV (10%), are recognized contributors to oral cancer pathogenesis, with high-risk HPV types 16 and 18 playing significant roles.[30,31] Common symptoms included pain or difficulty chewing/swallowing (30%), non-healing ulcers lasting more than three weeks (25%), and mucosal patches (20%)—all critical for early detection.[32] Early expert consultation, especially with dentists, is crucial for diagnosis, as supported by Hertrampf K et al.'s studies showing dental professionals often first detect suspicious lesions.[33]

The use of convenience sampling may introduce selection bias. Self-reported data may lead to social desirability bias. The study is conducted in one tertiary center, limiting the generalizability of findings to the broader Nepalese population.

CONCLUSION

This study revealed moderate awareness of oral cancer among patients at a tertiary dental care center in Nepal, with significant gaps in knowledge about certain risk factors and self-examination practices. Awareness varied notably by residence, education level, and occupation, with rural and less-educated populations showing the greatest deficits. Misconceptions regarding oral cancer's contagiousness and familial tendency remain prevalent.

Targeted educational campaigns focusing on rural and low-education groups, combined with robust tobacco control initiatives, are essential to enhance early detection and reduce oral cancer morbidity in Nepal. Additionally, promoting mouth self-examination and correcting misconceptions should be integral parts of public health strategies to improve outcomes.

Data Availability

The data that supports the findings of this study are available from the author upon reasonable request.

CONFLICT OF INTEREST

None

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