Case Study

Academia Journal of Medicine
Year 2026, Volume-9, Issue- 1 (January- June)

Knowledge, Awareness, and Practices Regarding Oral Cancer Screening Among General Dentists: A Cross-Sectional Study

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ARTICLE INFO

Keywords: Oral cancer, Screening, Knowledge, Awareness, General dentists, Early detection

doi:10.48165/ajm.2026.9.01.11

ABSTRACT

Background
Oral cancer is a major public health problem in India, with high morbidity and mortality largely due to late diagnosis. General dentists are often the first healthcare professionals to examine the oral cavity and thus play a critical role in early detection through routine oral cancer screening.

Aim: To assess the knowledge, awareness, and clinical practices related to oral cancer screening among general dentists.

Materials and Methods: A descriptive cross-sectional questionnaire-based study was conducted among 150 general dental practitioners. A validated, self-administered questionnaire comprising demographic details, knowledge, awareness, and practice-related questions was distributed. Data were analyzed using descriptive statistics and chi-square test to assess associations between variables.

Results: Out of 150 participants, 62% demonstrated moderate knowledge, 24% had good knowledge, and 14% had poor knowledge regarding oral cancer screening. Although 78% were aware of oral cancer screening methods, only 46% reported performing routine oral mucosal examinations for all patients. Lack of training (48%) and time constraints (41%) were identified as major barriers. A statistically significant association was observed between years of clinical experience and knowledge scores ($p < 0.05$).

Conclusion: While general dentists demonstrated fair awareness of oral cancer screening, gaps were observed in routine screening practices. Structured continuing dental education programs and hands-on training are recommended to enhance early detection and reduce oral cancer burden.

Introduction

Oral cancer is one of the most common malignancies in India, primarily due to widespread use of tobacco, areca nut, and alcohol.[1-3] According to global cancer statistics, oral squamous cell carcinoma accounts for nearly 90% of all oral malignancies.[4] Early-stage oral cancer has a significantly better prognosis; however, most cases are diagnosed at advanced stages, resulting in poor survival rates.[5,6]

General dentists are uniquely positioned to detect oral

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potentially malignant disorders (OPMDs) and early oral cancer during routine dental visits. Visual examination and palpation of oral tissues remain the cornerstone of oral cancer screening. Despite this, studies suggest that oral cancer screening is inconsistently practiced in general dental sttings.

Assessing the current level of knowledge, awareness, and screening practices among general dentists is essential to identify existing gaps and formulate targeted educational interventions. Hence, the present study was undertaken to assess the knowledge, awareness, and clinical practices related to oral cancer screening among general dentists.

Materials and Methods

Study Design and Setting: A descriptive cross-sectional questionnaire-based study was conducted among general dental practitioners to assess their knowledge, awareness, and practices regarding oral cancer screening. The study was carried out over a period of three months (Oct-Dec, 2025) in dental clinics and academic institutions within the study area.

Study Population: The study population consisted of general dental practitioners holding a Bachelor of Dental Surgery (BDS) degree and actively involved in clinical practice.

Inclusion Criteria

- BDS-qualified general dental practitioners
- Actively practicing dentistry during the study period
- Willing to participate and provide informed consent

Exclusion Criteria

- Dental specialists (MDS)
- Dental interns and undergraduate students
- Dentists not involved in clinical practice

Sample Size and Sampling Technique: A total of 150 general dental practitioners were included in the study. The sample size was determined based on feasibility and similar previously published studies assessing knowledge and awareness of oral cancer screening among dentists. A convenience sampling technique was employed. Participants were recruited through personal contact, professional networks, and online platforms.

Study Tool: Data were collected using a structured, self-administered questionnaire developed after reviewing relevant literature and previously validated questionnaires. The questionnaire comprised five sections:

1. Demographic and professional details: (Age, gender, years of practice, type of practice, average patient load)
2. Knowledge regarding oral cancer: (Risk factors, common sites, clinical features, oral potentially malignant disorders)
3. Awareness of oral cancer screening methods: (Routine screening, adjunctive diagnostic aids, biopsy indications)
4. Clinical practices related to oral cancer screening: (Frequency of oral examination, documentation, referral practices, tobacco cessation counseling)
5. Barriers and attitudes toward oral cancer screening: (Time constraints, lack of training, patient compliance, confidence levels)

Validity and Reliability of the Questionnaire: Content validity was assessed by a panel of three subject experts in Oral Medicine and Public Health Dentistry. Necessary modifications were made based on their suggestions.

A pilot study was conducted among 15 general dentists (not included in the final sample) to assess clarity and feasibility. Internal consistency of the questionnaire was evaluated using Cronbach's alpha, which yielded a value of 0.82, indicating good reliability.

Scoring System

Knowledge-based questions were scored as follows:

- Correct answer: 1 point
- Incorrect answer: 0 points

The total knowledge score was calculated and categorized as:

- Good knowledge: ≥75%
- Moderate knowledge: 50–74%
- Poor knowledge: <50%

Data Collection Procedure: Participants were informed about the objectives of the study, and written informed consent was obtained prior to data collection. The questionnaire was distributed either in printed form or online using Google Forms.

Participants were instructed to complete the questionnaire independently without external assistance. Anonymity and confidentiality of responses were assured.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 24.

- Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize the data.
- The Chi-square test was applied to assess the association between knowledge levels and demographic variables such as age, gender, and years of clinical experience.
- A p-value < 0.05 was considered statistically significant.

Result

The demographic profile of the participants indicated that the majority of general dentists were below 40 years of age and

predominantly engaged in private practice **(Table 1)**. Most participants had less than 10 years of clinical experience, reflecting a relatively young practicing population.

Assessment of knowledge revealed that although a substantial proportion of dentists were aware of major risk factors and common sites of oral cancer, only a limited number demonstrated comprehensive knowledge. Overall, 62% of participants exhibited moderate knowledge, while 24% showed good knowledge and 14% had poor knowledge, indicating the presence of significant knowledge gaps **(Tables 2 and 3)**.

Despite 78% of dentists being aware of oral cancer screening procedures, routine implementation in clinical practice was inadequate. Less than half of the participants reported performing oral mucosal examination for all patients, highlighting a disparity between knowledge and practice **(Tables 4 and 5)**.

Awareness of adjunctive diagnostic aids was moderate, with just over half of the dentists familiar with such tools, and even fewer having knowledge of advanced techniques such as autofluorescence-based screening (Table 4). Referral practices were suboptimal, as only 41.3% had ever referred a patient for biopsy or specialist evaluation **(Table 5)**.

The most commonly reported barriers to routine screening were lack of training and time constraints, emphasizing the need for structured educational interventions **(Table 6)**. A statistically significant association was observed between years of clinical experience and knowledge levels, with dentists having greater experience demonstrating higher knowledge scores **(Table 7)**.

Table 1. Demographic Characteristics of the Study Participants (n = 150)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<30	48	32.0
	30–40	57	38.0
	41–50	30	20.0
	>50	15	10.0
Gender	Male	87	58.0
	Female	63	42.0
Years of Practice	<5 years	69	46.0
	5–10 years	39	26.0
	11–20 years	27	18.0
	>20 years	15	10.0

Table 2. Knowledge Responses Related to Oral Cancer

Knowledge Item	Correct Response n (%)
Tobacco as major risk factor	122 (81.3)
Common site of oral cancer	104 (69.3)
Identification of OPMDs	96 (64.0)
Early clinical presentation	81 (54.0)
Indication for biopsy	118 (78.7)
Lymph node involvement	89 (59.3)

Table 3. Distribution of Knowledge Levels Among Participants

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Good	≥75%	36	24.0
Moderate	50–74%	93	62.0
Poor	<50%	21	14.0
Total	-	150	100

Table 4. Awareness of Screening and Diagnostic Methods

Awareness Parameter	Yes n (%)	No n (%)
Aware of oral cancer screening	117 (78.0)	33 (22.0)
Routine oral mucosal examination	69 (46.0)	81 (54.0)
Awareness of adjunctive aids	78 (52.0)	72 (48.0)
Knowledge of autofluorescence	57 (38.0)	93 (62.0)
Knowledge of toluidine blue	72 (48.0)	78 (52.0)

Table 5. Clinical Practices Related to Oral Cancer Screening

Practice Parameter	Response	Frequency (n)	Percentage (%)
Routine mucosal exam	Always	69	46.0
	Sometimes	54	36.0
	Never	27	18.0
Tobacco cessation counseling	Yes	95	63.3
Documentation of lesions	Always	58	38.7
	Sometimes	61	40.7
	Never	31	20.6
Referral for biopsy	Yes	62	41.3
	No	88	58.7

Table 6. Perceived Barriers to Oral Cancer Screening (Multiple Responses Allowed)

Barrier	Frequency (n)	Percentage (%)
Lack of training	72	48.0
Time constraints	62	41.3
Fear of misdiagnosis	44	29.3
Patient non-cooperation	38	25.3
Lack of diagnostic aids	31	20.7

Table 7. Association Between Knowledge Level and Years of Clinical Experience

Years of Practice	Good n (%)	Moderate n (%)	Poor n (%)	Total	p-value
<5 years	10 (14.5)	42 (60.9)	17 (24.6)	69	**0.03***
≥5 years	26 (32.1)	51 (63.0)	4 (4.9)	81	

*Significant

Discussion

Early detection of oral cancer significantly improves treatment outcomes and survival rates; therefore, general dentists play a pivotal role in routine oral cancer screening.[7,8] The present cross-sectional study assessed the knowledge, awareness, and practices regarding oral cancer screening among general dental practitioners and identified several important findings.

The results demonstrated that the majority of participants possessed moderate knowledge (62%), while only 24% exhibited good knowledge regarding oral cancer and its screening. Although most dentists correctly identified tobacco as a major risk factor, awareness of early clinical manifestations and oral potentially malignant disorders was comparatively lower. This finding suggests that theoretical knowledge may be present, but detailed understanding necessary for early diagnosis remains insufficient (Tables 2 and 3). Similar trends have been reported in previous studies, where dentists showed adequate awareness of risk factors but limited knowledge of early lesions.[9,10]

Despite 78% of participants being aware of oral cancer screening procedures, routine screening practices were inconsistent. Less than half of the dentists reported performing oral mucosal examinations for all patients, indicating a clear knowledge–practice gap (Tables 4 and 5). This discrepancy highlights the need to reinforce the importance of routine oral examination irrespective of the patient's chief complaint.

Awareness and utilization of adjunctive diagnostic aids were moderate in the present study. While over half of the dentists were aware of adjunctive screening tools, familiarity with advanced technologies such as autofluorescence-based devices was limited (Table 4). This may be attributed to lack of exposure, limited availability, and insufficient hands-on training.

Referral practices also revealed an area of concern, as only 41.3% of dentists had ever referred a patient for biopsy or specialist evaluation (Table 5). Delayed referral can contribute to late-stage diagnosis, underscoring the need to improve clinical decision-making and referral protocols among general dentists.

The most frequently reported barriers to routine oral cancer screening were lack of training and time constraints (Table 6). These findings are consistent with earlier reports and emphasize the importance of continuing dental education programs focused on practical screening techniques rather than purely theoretical knowledge.

A statistically significant association was observed between years of clinical experience and knowledge levels, with more experienced practitioners demonstrating better knowledge (Table 7). This suggests that clinical exposure enhances diagnostic awareness; however, reliance solely on experience is insufficient. Structured training programs during undergraduate education and regular professional development courses are essential to standardize screening practices.

Clinical Implications

Strengthening undergraduate curriculum, incorporating mandatory oral cancer screening protocols in routine dental practice, and promoting regular continuing dental education programs can significantly improve early detection rates.

Limitations

The study relied on self-reported data, which may introduce response bias. Additionally, convenience sampling limits the generalizability of the findings. Future studies using randomized sampling and clinical audits are recommended.

Conclusion

The findings highlight the need for targeted educational interventions to bridge the gap between knowledge and practice in oral cancer screening among general dentists.

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