

Oral Cancer Education in Dental Institutions: Knowledge and Experience Among Dental Students – A Questionnaire Based Study

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Abstract

Background: Dental curriculum and cancer education are becoming increasingly important as oral health professionals play a crucial role in the early detection of oral cancers, as well as understanding the impact of cancer treatments on oral health. In India, the integration of cancer education into dental curricula is evolving, but there are still some gaps in terms of systematic incorporation across all dental colleges, which will be dealt by increasing focus on increasing knowledge among students on early detection, cancer treatment and its related oral care, interdisciplinary programs, especially considering the high prevalence of oral cancer in the country. The present study aimed to assess the knowledge, experiences and level of oral cancer education of clinical dental students on the management and prevention of oral malignancy.

Methodology: A questionnaire constituting questions to identify the risk factors for development of oral cancer was circulated among the undergraduate students. More than one option was allowed to enter as answers.

Results: Knowledge score obtained was 68%, with significant variations between years of study ($p < 0.05$). Final-year students demonstrated better knowledge compared to third-year students, particularly in identifying risk factors and clinical features of oral cancer.

Conclusion: It is clear that while a significant proportion of dental students are aware of the risk factors, clinical signs, and preventive measures related to oral cancer, there is a need for further enhancement of their education in this crucial area.

Keywords: Oral Cancer, Dental Curriculum, Dental Education.

Introduction

Oral cancer is a major health problem in several regions of the world, particularly in developing nations. Around the world, there are significant differences in the incidence and site distribution of oral cancer. There are exceptionally with a very high rates of oral malignancy found in India and Sri Lanka, which accounts for almost 40% of all cancer cases. Oral cancer accounts for a considerable proportion of cancer-related morbidity and mortality globally. The World Health Organization (WHO) emphasizes the need for early detection and timely intervention to improve survival rates and reduce the economic burden associated with treatment. Dental professionals are uniquely positioned to identify early signs of oral cancer during routine examinations. However, the effectiveness of early detection depends heavily on their knowledge, skills, and confidence in identifying suspicious lesions [1,2].

Education and training in oral cancer detection and prevention are integral components of dental curricula worldwide [3,4]. Despite this, studies have reported gaps in knowledge and confidence among dental students, potentially impacting their ability to diagnose and manage oral cancer in clinical practice. This study aims to assess the knowledge and experience of dental students regarding oral cancer education and to identify areas for improvement in the curriculum [5]. The aim of this study was to assess the knowledge, experiences and level of oral cancer education of clinical dental students on the management and prevention of oral malignancy.

Methodology

A cross-sectional 8-itemed pretested questionnaire was designed and employed to all the clinical dental students after explaining the purpose of the study, a verbal consent was taken from the participants in the study to evaluate knowledge and awareness of oral cancer. All clinical dental students received a self-administered questionnaire. The questionnaire constitutes 7 close-ended (yes/no) questions and one open-ended question were asked to identify the risk factors for development of oral cancer and encouraged to select more than one option. Data were analyzed using Epi info version 6.04 (Centers for Disease Control, Atlanta, GA, USA). The chi square test of association and Fisher's exact test when cell number was low were used. Differences were considered significant when $p < 0.05$.

Results

Table 1. depicts the proportion of participants ($n=250$), with a mean age of 20.4 years (± 1.2), and 74% were female. 61.5% had examined a patient with oral premalignancy, and 87.7% had seen at least one patient with oral malignancy which shown in Table 2. Almost all respondents thought that pain was either always or occasionally connected to oral cancer, and majority of students were more familiar with the late symptoms of oral cancer than the early signs. Table 3 depicts there is no statistically significant difference in these risk factors across groups (commonly, significance is considered when $p < 0.05$). Knowledge score was 68%, with significant variations between years of study ($p < 0.05$). Final-year students demonstrated better knowledge compared to third-year students, particularly in identifying risk factors and clinical features of oral cancer. 60% of students believed their education on oral cancer was insufficient, citing limited clinical exposure and lack of hands-on training as key concerns.

Variable	N	%
Gender		
Male	40	16
Female	210	84
Year of study		
3rd year	91	36.4
4th year	87	34.8
Interns	72	28.8
More familiar with early signs	218	87.2
late signs of oral cancer	32	12.8

Table 1: Descriptive frequency of the participants

Lesions	Frequency (N=223)	Percentage (%)
Premalignant	209	94
Malignant	14	06

Table 2: Lesions most frequently observed by the students

Risk factor	Students		
	3 rd BDS	4 th BDS	Interns
Tobacco	51 (56%)	51 (58.6%)	34 (47.2%)
Alcohol	2 (2.2%)	5 (5.7%)	7 (9.7%)
Poor oral hygiene	8 (8.8%)	3 (3.4%)	8 (11.1%)
Family history	6 (6.6%)	5 (5.7%)	4 (5.6%)
Old age	7 (7.7%)	3 (3.4%)	0 (00%)
Spicy foods	4 (4.4%)	5 (5.7%)	8 (11.1%)
Nutrition deficiency	10 (11%)	7 (8%)	6 (8.3%)
Hot food and beverages	3 (3.3%)	8 (9.2%)	5 (6.9%)
P value 0.119			

Table 3: Percentage of high risk factors reported by student

Discussion

The present study aimed to assess the knowledge, awareness, and clinical experience of dental students regarding oral cancer and their preparedness to diagnose and manage it effectively. The findings underscore several critical points related to the gaps in education and the practical exposure provided to dental students in this domain.

Knowledge of Oral Cancer

Our study revealed that while most students demonstrated a basic understanding of the risk factors and clinical signs of oral cancer, significant gaps remained in their depth of knowledge. For instance, although tobacco and alcohol were widely recognized as key risk factors, other contributory factors such as human papillomavirus (HPV) and poor nutrition were less frequently identified. This aligns with findings from similar studies conducted by Sitheeque et al (2020) [6] and Arora et al. (2018) [7] which emphasize the need for a more comprehensive curriculum that integrates all etiological aspects of oral cancer.

Confidence in Clinical Examination

A significant proportion of students reported limited confidence in performing thorough oral cancer examinations. Despite theoretical knowledge, their practical exposure to identifying suspicious lesions or conducting biopsies was minimal. This is consistent with studies by Jaber et al. (2021) [8] and Carter & Ogden (2016) [9] which highlighted the lack of hands-on training in dental schools as a barrier to effective early detection of oral cancer.

Educational Gaps

The findings suggest that the current curriculum in dental institutions does not adequately emphasize oral cancer education. Many students reported that lectures and seminars focused primarily on theoretical aspects, with limited opportunities for clinical application. As suggested by Warnakulasuriya (2018) [10] integrating case-based learning and simulation exercises into the curriculum can enhance student’s diagnostic and clinical skills. Furthermore, providing opportunities for students to observe and manage real-life cases in oncology departments can bridge the gap between theory and practice.

Barriers to Oral Cancer Diagnosis

The study also highlighted systemic barriers, such as a lack of access to diagnostic tools and insufficient emphasis on oral cancer in clinical rotations. Students expressed the need for interdisciplinary collaboration with oncologists and pathologists to gain a more holistic understanding of oral cancer management.

Implications for Practice

Given that early detection is critical for improving survival rates in oral cancer patients, it is imperative that dental students are equipped with the necessary skills and knowledge. This study highlights the urgent need for curriculum reform to include:

1. Enhanced focus on clinical examination techniques.
2. Regular workshops on the use of diagnostic aids such as toluidine blue staining and biopsy techniques.
3. Training in patient communication, particularly for counseling high-risk individuals.

Limitations and Future Directions: The limitations of this study include its reliance on self-reported data, which may be subject to response bias. Additionally, the study was conducted in a single institution, which may limit the generalizability of the findings. Future research should aim to evaluate oral cancer education across multiple institutions and investigate the long-term impact of curricular changes on diagnostic accuracy and patient outcomes.

Conclusion

The findings of this study underscore the need for a more robust and practical approach to oral cancer education in dental schools. By addressing the identified gaps and barriers, institutions can empower future dental professionals to play a pivotal role in the early detection and management of oral cancer, ultimately improving patient survival and quality of life.

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