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Knowledge and Awareness of Medical and Dental Students about Oral Cancer Risk Factors: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - No external funding was received.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 November 2024 and was last updated on 7 November 2024.

INTRODUCTION

Review question / Objective What proportion of medical and dental students know and are aware of the different risk factors that influence the development of oral cancer?

Rationale Oral cancer (OC) generally affects adults in the 5th to 6th decade of life. However, its incidence in younger individuals has increased in recent years. It is more common in men than in women with a 2:1 ratio. According to worldwide reports, the highest proportion of OC is diagnosed in Asia and Europe and less frequently in Africa and Oceania.

Among the different risk factors that contribute to the development of OC are smoking (tobacco-related products), advanced age, UV-rays exposure, alcoholism, pre-existing oral potentially malignant oral disorders (OPMD) such as oral leukoplakia and erythroplakia, poor oral hygiene, human papillomavirus (HPV) infection, genetic predisposition, chronic mucosal trauma, nutritional deficiencies (malnutrition), immunosuppression and/or systemic diseases, among others.

Clinically, the lesions present as asymptomatic, non-healing ulcers of variable size, irregular margins and hard on palpation. Frequently, the lesions mainly affect the lateral border of the tongue, followed by the floor of the mouth. Facial disfigurement and functional deficits (swallowing, speech and taste) are characteristic of advanced stages. In addition, it can spread to the nearest lymph nodes. The lungs, bone and liver are typical sites of metastasis. This has a substantial impact on the oral health-related quality of life of patients.

Clinical examination of the oral cavity and surgical biopsy confirm the diagnosis of OC. Prognosis is evaluated according to different variables such as patient age, histologic grade of the tumor, TNM stage, smoking and alcohol consumption. Finally, treatment is based on surgical resection with or without adjuvant treatment (chemotherapy and/or radiotherapy).

Numerous studies have investigated the level of knowledge and awareness of OC among medical and dental students through surveys in different parts of the world. However, currently, no systematic review summarizing the knowledge about OC etiology has been published.

Condition being studied Oral cancer is the most common malignancy relative to head and neck cancer, accounting for 3% of all cancers. Its morbidity and mortality are high. The 5-year survival rate has been shown to be 50% and decreases as disease severity progresses, even after standard treatment, the recurrence rate is as high as 18-76%, resulting in annual treatment costs of more than $2 billion. This makes it to date a major social, economic and public health problem.

METHODS

Search strategy An electronic search was carried out in four databases: PubMed, ScienceDirect, Scopus and Web of Science, from February 20th, 2005, to May 10th, 2024. For PubMed, the following search strategy was employed: ((((("Squamous Cell Carcinoma of Head and Neck/diagnosis"[Mesh] OR "Squamous Cell Carcinoma of Head and Neck/diagnostic imaging"[Mesh] OR "Squamous Cell Carcinoma of Head and Neck/drug therapy"[Mesh] OR "Squamous Cell Carcinoma of Head and Neck/prevention and control"[Mesh] OR "Squamous Cell Carcinoma of Head and Neck/therapy"[Mesh])) OR "Mouth Neoplasms"[Mesh]) AND "Knowledge"[Mesh]) AND "Awareness"[Mesh]) AND "Students, Medical"[Mesh]) OR "Students, Dental"[Mesh]. For the rest, the keywords "Oral Cancer", "Education", "Knowledge", "Awareness", "Dental Students", and "Medical Students" were used along with the use of Boolean operators "OR" and "AND". A manual search was also carried out in the following Journals: "Journal of Cancer Education", "Cancer Radiotherapie", "Journal of Cancer Research and Therapeutics", "Bulletin Du Cancer", "Bladder Cancer", "Indian Journal of Cancer" and "Translational Cancer Research".

Participant or population Dental students.

Intervention Proportion of knowledge about associated risk factor in oral cancer.

Comparator Medical students.

Study designs to be included Cross-sectional studies.

Eligibility criteria
The review included:
• English-language cross-sectional studies published after 2005.
• Studies that assessed OC knowledge and awareness through surveys applied either directly or electronically to medical and dental students.
The review excluded:
• Reviews, book chapters, short communications, letters to the editor, posters, encyclopedias, and editorials.
• Studies assessing knowledge and awareness of OC among patients, general practice dentists and/or specialists from a particular medical institution.

Information sources An electronic search was carried out in four databases: PubMed, ScienceDirect, Scopus and Web of Science, from February 20th, 2005, to May 10th, 2024.

Main outcome(s) To assess the knowledge of medical and dental students about the risk factors associated with oral cancer.

Additional outcome(s) None.

Data management Two investigators conducted the study selection process independently. First, duplicate articles and papers with irrelevant subject matter were discarded. Then, after reading the full text and applying the inclusion and exclusion criteria, a third reviewer was consulted to resolve any conflicts and, after reaching consensus, a final decision was made on the studies in disagreement.
For this review, two investigators extracted the following information from the independently selected articles:
• Sociodemographic characteristics of the study: comprising first and second author, year of publication, country, study design, ethics committee approval, and participants (medical and dental students).
• Participant characteristics: Gender and age.
• Methodological characteristics: Data collection (questionnaire used), dissemination of the questionnaire (direct application or by electronic means), duration of the survey activity.
• Results: Assessment of OC knowledge and awareness.

Quality assessment / Risk of bias analysis Two investigators assessed study quality using the critical appraisal checklist for cross-sectional studies developed by the Joanna Briggs Institute (JBI), which is available at: https://jbi.global/critical-appraisal-tools. Studies with a score >7 low

risk of bias.58 For any inconsistencies a third reviewer was involved in the process.

Strategy of data synthesis The results were systematically illustrated in a forest plot and expressed as odds ratios (OR) with a 95% confidence interval (CI). The I2 statistic assessed the heterogeneity among the studies. When heterogeneity exceeded 50%, which is statistically significant, a random effects model was utilized. To evaluate potential publication bias, a funnel plot and Egger's regression analysis were created. A p value of < 0.05 was established as significant. All statistical analyses were conducted using STATA V.15 software (StataCorp LP, College Station, TX, USA).

Subgroup analysis None.

Sensitivity analysis Not applicable.

Language restriction English language.

Country(ies) involved México, Armenia.

Other relevant information None.

Keywords Risk factors, oral cancer, medical students, dental students, oral cancer awareness.

Dissemination plans To publish this review.

Contributions of each author

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