**Summary Review /** Oral Cancer

**Title/Question**

**Is there an association between past dental visits and the incidence of cancers of the Head and Neck (HN); upper aerodigestive tract (UADT); and oral cavity?**

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**A Commentary on** Gupta B, Kumar N, Johnson NW. Evidence of past dental visits and incidence of head and neck cancers: a systematic review and meta-analysis. Syst Rev. 2019 Feb 4;8(1):43. doi: 10.1186/s13643-019-0949-0. Review. PubMed PMID: 30717784; PubMed Central PMCID: PMC6360721.

**Data sources** PubMed, CINAHL, and Cochrane databases.

**Study selection** Papers reporting a primary study with any population, one or both genders specified, participants of any age, incidence of any cancer subsite of HN, and UADT reported as the health outcome, frequency of dental visits/check-ups prior to the diagnosis of one of these cancers (assessed as the exposure), and availability of sufficient data to estimate the measure of association, i.e., unadjusted odds ratio (OR) along with its corresponding 95% confidence interval (CI).

**Data extraction and synthesis** Two reviewers independently screened the title and abstract of the identified citations. Full texts of citations judged as potentially eligible were acquired by at least one of the two reviewers. Thereafter, both the reviewers used a standardized and pilot-tested form to independently screen every full text for eligibility. Methodological quality of the studies was assessed using the quality assessment tool for quantitative studies developed by the Effective Public Health Practice Project
(EPHPP)

**Results** After initial search of 1377 studies, thirty-eight articles were included in the analysis for systemic review including 32 case-control and 6 other design studies not limited to cross-sectional, observational, case-series, and screening. Finally, twenty-six case-control studies were included in the meta-analysis. Subgroup analyses of studies in meta-analysis showed he overall pooled estimate risk was (OR 2.01; 95% CI 1.76 to 2.30, $P < 0.001$). The test for heterogeneity produced Tau square of 0.00, $Q = 36.33$, $I2 = 31.76\%$, test for overall effect $z = 9.24$, ($P < 0.001$). No publication bias was observed in the metanalysis.

**Conclusions** Individuals with never/irregular/not frequent dental visits are more likely to be incident cases of HNCs/UADT cancers. Targeted education to alert those at risk about OCs and other HNCs, and the warning signs, and better training coupled with opportunistic oral cavity examinations by dentists could reduce the burden of this disease.

**GRADE Rating: Medium**

## Commentary

The systematic review and meta-analysis by Gupta etal., 2019 presents a comprehensive evaluation of the impact of past dental visits on the incidence of oral cancer. Oral cancer is the sixth most common cancer worldwide and over half a million cases are reported annually. [1,2] The incidence of oral cancer is rising across the globe and delays in management increase the risk of advanced disease and poor survival rates.[3] According to WHO, most oral cancers are detected at a late stage, requiring complex, costly treatments and current efforts in the global fight against cancer are burdened by high cost, high morbidity and high mortality.[4]

Although a variety of approaches to screening for oral cancer have been investigated, cost-effectiveness remains a major barrier in implementation of formal national oral cancer screening programs.[5] There is widespread recognition about the role of dentists and allied dental care professionals in early recognition of oral cancer and prompt referral for treatment in specialist settings.[6] Given that public screening for oral cancer is not feasible, regular dental visits provide one of the most viable options opportunistic oral cancer screening. Routine use of visual oral screening may reduce oral cancer mortality among the high-risk groups such as users of tobacco and alcohol.[7]

In most developed countries, meticulous oral examination for identification of suspicious oral precancerous and cancerous lesions is part of a dental professionals' duty of care. Dental professionals are also expected to provide

preventive advice regarding lifestyle risk factors such as smoking, alcohol and betel nut consumption. [8] Moreover, there is growing recognition of the need for public health education to raise awareness regarding the risk of UADT and oral cancers caused by human papilloma virus.[9,10] Evidence from the literature suggests that dental professionals need additional education and training to provide effective patient education on the risks of oral cancer due to human papilloma virus infection which is often related to sexual practices and requires sensitive communication.[11]

Disparities in healthcare facilities in developing countries pose additional challenges for public health officials, physicians as well as patients at each level.[12] Given that the incidence of oral cancer shows wide geographic variations and nearly two thirds of oral cancer cases are reported from the developing countries[13] a global approach to reduce the oral cancer burden is warranted. Many low-income countries lack a quality healthcare infrastructure and there is dearth of national cancer registries and cancer statistics are largely based on figure from hospital-based registries.[14] Many low-income countries with the highest incidence of oral cancer do not have clear national policies on the diagnosis and referral pathways for the management of oral cancer. Lack of public awareness regarding risk factors for oral cancer, and inadequate number specialist centers and trained professionals are additional barriers in the fight against cancer. Concerted efforts from national and global policy makers and professional bodies are required to reduce the global burden of oral cancer including a renewed focus on prevention. Until then, the fight against cancer, particularly in developing countries, will remain aspirational!

**Practice Points**

- HN, UADT and Oral cavity cancers are common and early recognition is crucial to reduce the associated morbidity and mortality

- Routine visual oral screening by dental professionals remains the most feasible tool to identify and refer suspected oral cancer for prompt management.

- There is a need to improve the training of dentists and dental care professionals for early recognition of oral cancer for prompt referral and treatment.

- Public awareness regarding the risk of oral cancer due to human papilloma virus infection is insufficient and needs to be reinforced by dental professionals.

## References


1. Chan KK, Glenny AM, Weldon JC, Furness S, Worthington HV, Wakeford H. Interventions for the treatment of oral and oropharyngeal cancers: targeted therapy and immunotherapy. Cochrane Database Syst Rev. 2015 Dec 1;(12):CD010341.

2. Cosway B, Lovat P. The role of autophagy in squamous cell carcinoma of the head and neck. Oral Oncol. 2016 Mar;54:1-6.

3. Seoane, J., Alvarez–Novoa, P., Gomez, I., Takkouche, B., Diz, P., Warnakulasiruya, S., Seoane–Romero, J.M. and Varela–Centelles, P., 2016. Early oral cancer diagnosis: The Aarhus statement perspective. A systematic review and meta-analysis. Head & neck, 38(S1), pp.E2182-E2189.

4. Mignogna MD, Fedele S, Russo LL. The World Cancer Report and the burden of oral cancer. European journal of cancer prevention. 2004 Apr 1;13(2):139-42.

5. Speight PM, Epstein J, Kujan O, Lingen MW, Nagao T, Ranganathan K, Vargas P. Screening for oral cancer-a perspective from the Global Oral Cancer Forum. Oral Surg Oral Med Oral Pathol Oral Radiol. 2017 Jun;123(6):680-687.

6. Warnakulasuriya S, Fennell N, Diz P, Seoane J, Rapidis A, LDV Lifelong Learning Programme. An appraisal of oral cancer and pre-cancer screening programmes in E urope: a systematic review. Journal of Oral Pathology & Medicine. 2015 Sep;44(8):559-70.

7. Reid BC. Visual screening for oral cancer may reduce oral cancer mortality in high-risk adult populations through early diagnosis and treatment. Journal of Evidence Based Dental Practice. 2013 Dec 1;13(4):174-6.

8. Ghantous Y, Abu IE. Global incidence and risk factors of oral cancer. Harefuah. 2017 Oct;156(10):645-9.

9. Chattopadhyay A, Weatherspoon D, Pinto A. Human papillomavirus and oral cancer: a primer for dental public health professionals. Community Dent Health. 2015 Jun;32(2):117-28. Review.

10. Wheldon CW, Krakow M, Thompson EL, Moser RP. National Trends in Human Papillomavirus Awareness and Knowledge of Human Papillomavirus–Related Cancers. American journal of preventive medicine. 2019 Apr 1;56(4):e117-23.

11. Griner SB, Thompson EL, Vamos CA, Chaturvedi AK, Vazquez-Otero C, Merrell LK, Kline NS, Daley EM. Dental opinion leaders' perspectives on barriers and facilitators to HPV-related prevention. Human vaccines & immunotherapeutics. 2019 Feb 18:1-7.

12. De Souza JA, Hunt B, Asirwa FC, Adebamowo C, Lopes G. Global health equity: cancer care outcome disparities in high-, middle-, and low-income countries. Journal of Clinical Oncology. 2016 Jan;34(1):6.

13. Johnson NW, Warnakulasuriya S, Gupta PC, et al. Global oral health inequalities in incidence and outcomes for oral cancer: causes and solutions. Adv Dent Res 2011;23:237–246.

14. Sharma V, Kerr SH, Kawar Z, Kerr DJ. Challenges of cancer control in developing countries: current status and future perspective. Future oncology. 2011 Oct;7(10):1213-22.

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