

REVIEW ARTICLE

RISK FACTORS ASSOCIATED WITH ORAL CANCER: A COMPREHENSIVE REVIEW

¹Divya Jyoti, ²Arvind Bhatheja, ³Tarun Gupta, ⁴Mayank Arora, ⁵Monica Kedia, ⁶Deepak Narang

¹PG student, Department of Periodontology, Desh Bhagat Dental College, Punjab

²PG student, Department of Conservative Dentistry, DJ College Of Dental Sciences And Research, Modinagar

³PG student, Department of Oral Pathology, DJ college of Dental Sciences And Research, Modinagar

⁴Demonstrator, Department of Conservative Dentistry, PGIMS, Rohtak, Haryana

⁵PG student, Department of Conservative dentistry, JCD Dental College, Sirsa, Haryana

⁶Senior Lecturer, Department of Oral medicine & Radiology, Rungta College of Dental Sciences and Research, Bhilai, Chhattisgarh 490024

ABSTRACT:

Most malignancy found in the mouth is oral squamous cell carcinoma. This infection is extraordinary in the created world, aside from in parts of France, yet it is normal in the creating scene, especially Southeast Asia and Brazil. Oral disease ordinarily is found in men past middle age (despite the fact that it is progressively basic in more youthful individuals), tobacco clients, and individuals from lower financial groups. Hence; in this review, we tend to summarize various risk factors associated with oral cancer.

Key words: Cancer, Oral, Risk.

Correspondence address: Dr. Divya Jyoti, PG student, Department of Periodontology, Desh Bhagat Dental College, Punjab

This article may be cited as: Jyoti D, Bhatheja A, Gupta T, Arora M, Kedia M, Narang D. Risk factors associated with oral cancer: A comprehensive review. J Adv Med Dent Scie Res 2017;5(5):32-34.

Access this article online

Quick Response Code



Website: www.jamdsr.com

DOI:

10.21276/jamdsr.2017.5.5.8

I NTRODUCTION

Head and neck carcinomas (HNCs) originate from the mucosa coating the oral cavity, the oropharynx, the hypopharynx, the larynx, the nasopharynx and the sino-nasal tract. The most well-known histological sort is squamous cell carcinoma (SCC).¹⁻³

More than 650,000 patients are determined to have head and neck squamous cell carcinoma (HNSCC) worldwide consistently and more than 350,000 kick the bucket of it. In the USA, the occurrence of HNSCC in pharynx and oral depression is 11.9 for each 100,000, with men influenced in a 3:1 extent contrasted with ladies; moreover, the frequency of oropharyngeal carcinoma has ventured up, particularly in the amygdala and in the base of the tongue, and in people matured 40-55.⁴⁻⁶

The similitudes in the clinical angles between the oral and genital wounds related with HPV drove clinicians in the eighties to recommend that HPV may be included in oral carcinogenesis. A portion of the components included would be HPV's partiality to epithelial cells, HPV's oncogenic potential and morphological likenesses amongst genital and oropharyngeal epithelia. Other conceivable explanations behind perplexity may have

been seeing HNSCC as a solitary substance, or studies neglecting to determine whether the confinement was quite recently oral, oropharyngeal or others, which would render it hard to extrapolate the got information.^{7,8}

As of late, information from case-control and meta-logical reviews demonstrate that HPV would be, undoubtedly, an autonomous hazard figure for the improvement of oropharyngeal and oral carcinomas. HNSCCs related with HPV appear to be, in this manner, a particular clinical element with an alternate advancement as well, since these tumors have a superior guess than the HPV-negative ones.⁹⁻¹¹ Additionally, a solid affiliation appears to exist between patient age and HPV-16's disease pervasiveness. These cases happen generally in white and Asian guys with no past record of tobacco or liquor utilization, two hazard calculates customarily connected with this disease.¹²

Various hazard elements or conceivable causative specialists for OC have been portrayed. Concoction variables like tobacco and liquor, organic elements like human papillomavirus (HPV), syphilis, oro-dental components, dietary insufficiencies, incessant candidiasis and infections have been appeared to be altogether connected with OC.¹³

SUBSTANCE FACTORS

Tobacco

There are adequate confirmations recommending that tobacco in different structures, including smoking, biting and in betel quid and so forth., have cancer-causing sway in oral cavity. The commonest type of tobacco utilize is smoking.¹⁴ The different structures in which tobacco is utilized as smoke may be cigarettes, stogies, pipe and bidi and so forth. Hookah or chillum (a mud pipe used to keep the consuming tobacco) are other normal types of smoking in a few nations of Asia including India. In some piece of India like Mizoram, tobacco smoke is broken down in water ("smoke on the water") which is another curious type of tobacco utilize.¹⁵

Liquor

Various reviews have proposed liquor to be a noteworthy hazard figure for OC. There is a sure level of discussion whether liquor alone may have cancer-causing sway. This is because of synchronous tobacco and liquor admission of study subjects in different epidemiological reviews. Examines have demonstrated that people expending more than 170 g of whisky day by day have ten times higher danger of OC than the light consumers. Liquor may have added substance impact and it has been proposed that it encourages the section of cancer-causing agents into the uncovered cells, modifying the digestion of oral mucosal cells. Be that as it may, the present confirmations don't propose that immaculate ethanol alone is cancer-causing agent for the advancement of OC.¹⁶

Natural Factors

Infections

Part of oncogenic infections in human growth is a rising zone of research. Infections are fit for capturing host cell mechanical assembly and adjusting DNA and the chromosomal structures and actuating proliferative changes in the phones. HPV and Herpes simplex infection (HSV) have been set up as of late as causative specialists of OC.^{17, 18}

HPV has been recognized in around 23.5% of OC cases. The most generally identified HPV in head and neck squamous cell carcinoma (HNSCC) is HPV-16, which has been exhibited in 90–95% of all HPV positive HNSCC cases, trailed by HPV-18, HPV-31, and HPV-33. The prognostic noteworthiness of HPV in pre-harmful oral sore is not clear. Be that as it may, few reviews have discovered enhanced infection particular survival and better guess for HPV positive OC.¹⁹

HSV-1 or "oral herpes" is normally connected with wounds around the mouth and lip and has been recommended to be a causative specialist of OC. Epidemiological reviews indicated more elevated amount of IgG and IgM antibodies to OC patients contrasted with control subjects. Kassim et al likewise detailed oncogenic connection between HSV-1 and oral squamous cell carcinoma (OSCC). A populace based review demonstrated HSV-1 to improve advancement of OSCC

in HPV contaminated patients and people with history of cigarette smoking. Danger of oral pit and pharyngeal malignancy is two-overlay higher among human immunodeficiency infection (HIV) patients showing a connection amongst HIV and OSCC. Epstein Barr Virus (EBV), human herpesvirus-8 (HHV-8) and cytomegalovirus have additionally been accounted for as hazard elements of OSCC in various reviews.^{20–22}

Syphilis

The information on causal relationship amongst syphilis and OC is frail. There are reports of 19 and 6% serological energy for syphilis among tongue disease patients.²³

Candida

Candida has been recommended to assume a part in start of OC. Clinical reviews have announced that nodular leukoplakia tainted with Candida has a propensity for higher rate of dysplasia and threatening change. It has additionally been demonstrated that epithelium of the chick developing life, when tainted with Candida albicans indicate squamous metaplasia and higher proliferative phenotype. The causal relationship of Candida contamination and OC is as yet dubious and requests additional evidence.^{24, 25}

Dental Hygiene and Related Factors

There is reverse relationship between oral cleanliness and frequency of OC. Poor oral cleanliness and delayed bothering from sharp teeth have been seen for their conceivable part in the advancement of OC. Poor oral cleanliness and dental sepsis is thought to advance cancer-causing activity of tobacco. There are a few scattered reports on the part of oro-dental calculates the causation of OC, yet the speculation still needs significant confirmation.^{26, 27}

Nourishing Factors

Dietary inadequacies are likewise recommended to assume a part in the advancement of OC. This, in any case, requires more clinical and test confirm for foundation of causal relationship with the improvement of OC. A few specialists have detailed lower danger of OC with higher admission of foods grown from the ground.²⁸

CONCLUSION

Dental practitioners, as wellbeing experts, should get all the more vigorously required in the discovery of these components suggested in the etiology and pathogenesis of these wounds so as to add to the early recognition and avoidance of this sort of wounds, particularly in youthful patients with no dangerous propensities generally connected to oral growth, for example, tobacco and additionally liquor utilization.

REFERENCES

1. Gillison ML, Koch WM, Capone RB, Spafford M, Westra WH, Wu L. Evidence for a causal association between

- human papillomavirus and a subset of head and neck cancers. *J Natl Cancer Inst.* 2000;92:709–20.
- 2. Dayyani F, Etzel CJ, Liu M, Ho CH, Lippman SM, Tsao AS. Meta-Analysis of the impact of Human Papillomavirus (HPV) on cancer risk and overall survival in head and neck squamous cell carcinomas (HNSCC). *Head & Neck Oncology.* 2010;2:15.
 - 3. Miller CS, Johnstone BM. Human papillomavirus as a risk factor for oral squamous cell carcinoma: a meta-analysis, 1982–1997. *OralSurg Oral Med Oral Pathol Oral RadiolEndod.* 2001;91:622–35.
 - 4. Gillison ML, D'Souza G, Westra W, Sugar E, Xiao W, Begum A. Distinct risk factor profiles for human papillomavirus type-16 positive and human papillomavirus type-16 negative head and neck cancers. *J Natl Cancer Inst.* 2008;100:407–20.
 - 5. Nguyen NP, Chi A, Nguyen LM, Ly BH, Karlsson U, Vinh à Hung V. Human papillomavirus-associated oropharyngeal cancer: a new clinical entity. *QJM.* 2010;103:229–36.
 - 6. Herrero R, Castellsagué X, Pawlita M, Lissowska J, Kee F, Balaram P. Human papillomavirus and oral cancer: the international agency for research on cancer multicenter study. *J Natl Cancer Inst.* 2003;95:1772–83.
 - 7. D'Souza G, Zhang HH, D'Souza WD, Meyer RR, Gillison ML. Moderate predictive value of demographic and behavioral characteristics for a diagnosis of HPV16-positive and HPV16-negative head and neck cancer. *Oral Oncol.* 2010;46:100–4.
 - 8. Saini R, Saini S, Sharma S. Oral sex, oral health and orogenital infections. *J Global Infect Dis.* 2002;2:57–62.
 - 9. Herrero R, Castellsagué X, Pawlita M, Lissowska J, Kee F, Balaram P, et al. Human papillomavirus and oral cancer: The international agency for research on cancer multicenter study. *J Natl Cancer Inst.* 2003;95:1772–83.
 - 10. Schwartz SM, Daling JR, Doody DR, Wipf GC, Carter JJ, Madeleine MM, et al. Oral cancer risk in relation to sexual history and evidence of human papillomavirus infection. *J Natl Cancer Inst.* 2003;21:1626–36.
 - 11. D'souza G, Kreimer AR, Viscidi R, Pawlita M, Fakhry C, Koch WM, et al. Case control study of human papillomavirus and oropharyngeal cancer. *N Engl J Med.* 2007;356:1944–56.
 - 12. Saini R. Semen swallowing is safe: Oral sex focus. *Chron Young Sci.* 2010;3:30.
 - 13. Onizawa K, Nishihara K, Yamagata K, Yusa H, Yanagawa T, Yoshida H. Factors associated with diagnostic delay of oral squamous cell carcinoma. *Oral Oncol.* 2003;39:781–788. [PubMed]
 - 14. Hollows P, McAndrew PG, Perini MG. Delays in the referral and treatment of oral squamous cell carcinoma. *Br Dent J.* 2000;188:262–265.
 - 15. Donnell A, Jin S, Zavras AI. Delay in the diagnosis of oral cancer. *J Stomatol Invest.* 2008;2:15–26.
 - 16. Kerdpon D, Sriplung H. Factors related to advanced stage oral squamous cell carcinoma in southern Thailand. *Oral Oncol.* 2001;37:216–221.
 - 17. Allison P, Franco E, Black M, Feine J. The role of professional diagnostic delays in the prognosis of upper aerodigestive tract carcinoma. *Oral Oncol.* 1998;34:147–153.
 - 18. Pitiphat W, Diehl SR, Laskaris G, Cartsos V, Douglass CW, Zavras AI. Factors associated with delay in the diagnosis of oral cancer. *J Dent Res.* 2002;81:192–197.
 - 19. Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA Cancer J Clin.* 2005;55:74–108.
 - 20. Chen GS, Chen CH. A statistical analysis of oral squamous cell carcinoma. *Kaohsiung J Med Sci.* 1995;1:582–588.
 - 21. Petersen PE. Oral cancer prevention and control the approach of the World Health Organization. *Oral Oncol.* 2009;45:454–460.
 - 22. Donnell A, Jin S, Zavras AI. Delay in the diagnosis of oral cancer. *J Stomatol Invest.* 2008;2:15–26.
 - 23. Kerdpon D, Sriplung H. Factors related to advanced stage oral squamous cell carcinoma in southern Thailand. *Oral Oncol.* 2001;37:216–221.
 - 24. Califano J, Riet P, Westra W, Nawroz H, Clayman G, Piantadosi S, et al. Genetic progression model for head and neck cancer: implications for field cancerization. *Cancer Res.* 1996;56(11):2488–2492.
 - 25. Nunes DN, Kowalski LP, Simpson AJ. Detection of oral and oropharyngeal cancer by microsatellite analysis in mouth washes and lesions brushings. *Oral Oncol.* 2000;36(6):525–528.
 - 26. Spafford MF, Koch WM, Reed AL, Califano JA, Xu LH, Eisenberger CF, et al. Detection of head and neck squamous cell carcinoma among exfoliated oral mucosal cells by microsatellite analysis. *Clin Cancer Res.* 2001;7(3):607–612.
 - 27. Rosas SL, Koch W, da Costa Carvalho MG, Wu L, Califano J, et al. Promoter hypermethylation patterns of p16, O6-methylguanine-DNA methyl transferase, and death-associated protein kinase in tumors and saliva of head and neck cancer patients. *Cancer Res.* 2001;61(3):939–942.
 - 28. DeVita VT Jr, Lawrence TS, Rosenberg SA, editors. *Cancer principals and practice of oncology.* 8. Philadelphia: Lippincott-Williams and Wilkins; 2008. pp. 799–808.

Source of support: Nil

Conflict of interest: None declared

This work is licensed under CC BY: Creative Commons Attribution 3.0 License.