

ORAL HYGIENE STATUS OF CANCER AND NON CANCER PATIENTS - A HOSPITAL BASED STUDY

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ABSTRACT

Objective: To assess the association between oral hygiene practice and occurrence of oral squamous cell carcinoma.

Methods: An epidemiologic study of total 1254 persons including 480 oral squamous cell carcinoma cases and 774 persons selected as controls without any oral precancerous and cancerous lesion, cases and controls matching with same socioeconomic background and with almost similar tobacco consumption habits. Detailed information on smoking, alcohol consumption, years of schooling, oral health status and hygiene practices were obtained through a question nairetested with a pilot study. Age, sex, educational status, habits of smoking, drinking, and tooth brushing along with estimation of oral health status using unconditional logistic regression was analyzed.

Results: The complain of regular gum bleeding associated with plaque and calculus showed significant positive correlation with oral squamous cell carcinoma. Neglected oral health and no dental visiting patients are on higher risks for having oral squamous cell carcinoma.

Conclusions: Poor oral hygiene, use of mouth wash along with other deleterious oral habits has significant association with oral cancer.

INTRODUCTION

Global incidence of oral cancer is around 270,000 accounting fifth and the seventh most common cancer in male and female respectively¹. In Asian countries tobacco with or without liquor consumption is considered as the main cause of oral cancer,² in addition to these deleterious habits, nutrition,³ occupation⁴ and genetic composition of an individual⁵ effects the carcinogenesis of oral cavity. Previous research has provided the evidence for poor oral hygiene as anetiologic factor for cancer in oropharyngeal region. Occasional and improper brushing, faulty/ ill fitted dentures, prolonged use of mouth rinse is associated with cancer of oropharyngeal region.^{6,7,8}

An epidemiologic study conducted in one tertiary referral center reported non-significant association with incidence of oral cancer with chemical methods of oral hygiene maintenance practiced in persons not indulged in deleterious oral habits.⁹ commercially available mouthwash brands in market are alcohol based, which is known dehydrating agent and irritant which can be a reason to the observed higher chances of oral cancer with its use. This study was planned to find out any association of oral cancer incidence with oral health status, and hygiene practices.

MATERIALS & METHODOLOGY

This study was carried out in a metropolitan area of West Bengal state in India from 2010-2013. Cases & controls were recruited from the outdoor of one dental hospital. On the basis of exclusion and inclusion criteria 1254 patients were interrogated. These all 1254 patients were either from Bengali population or living there for at least 10 years. 480 patients out of all 1254 was histo-pathologically confirmed as oral squamous cell carcinoma patients. All carcinomatous lesions involve primary site on lips, tongue, buccal mucosa, floor of mouth, gingivae, palate and pharynx. 774 Control were selected from attendants and patients without any cancer and pre-cancer lesion attending the hospital during the study period. All interactions with cases and controls were carried out by trained clinicians. Socioeconomic and oral health status profile data were collected through face-to-face interviews using a standardized questionnaire applied to all cases and controls. Study questionnaire performa included socioeconomic status, oral habits such as smoking, alcohol consumption, personnel and family history of cancer, chronic infectious diseases, and oral health and hygiene practice a pilot study was done with this performa on a group of ten cases and ten controls, and few adjustments were made in it before its application in final study. Oral health and its maintenance were assessed with underlying variables:

- Status of oral hygiene
- Dental prosthesis uses
- Number of dental visits in the last one year duration,
- Frequency of dental brushing

Subjects consuming alcohol were classified into the following categories of: non-drinkers, former drinkers (no alcohol consumption for at least one year prior to the interview), or current drinkers. No of packs consuming weekly, consuming which type of liquor Indian or India made foreign liquor. Number of dental visits in the last one year was asked in numbers. The association between oral health and hygiene practices and oral cancer was estimated using unconditional logistic regression.¹⁰ Design of study was approved by the ethical committee of research unit of the dental institute. Objectives of study are clearly explained to both cases and controls and written consent was obtained with the promise not to disclose the identity.

RESULTS

This study was done on 480 patients of oral cancer. Most common anatomical site of oral cancer was buccal mucosa, followed by tongue, alveolar ridge. Most of oral cancer patients' reported with moderate to severe gingival inflammation and only 14 patients' were edentulous

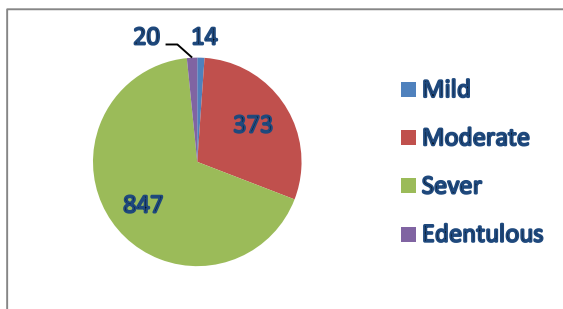


Fig. 1: Oral hygiene status of study group including cases and controls

Poor oral hygiene along with bleeding gum during brushing was associated with increased risk of oral cancer. Those who never visited dental clinic/ dentist had a statistically significant risk of occurrence of oral cancer 2.3times higher as compared to those who had frequent dental visits.

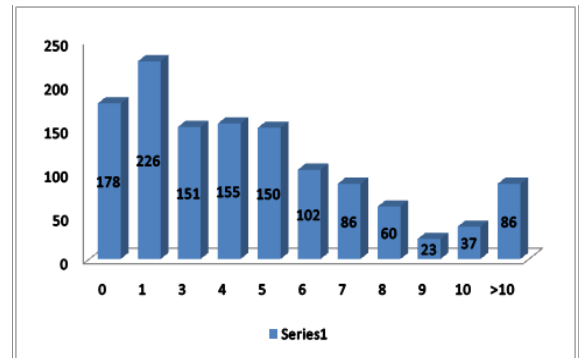


Fig. 2: Distribution of studied population according to annual dental visits.

DISCUSSION

The results of the present study for the effect of tobacco smoking and alcohol consumption confirms that these are the important risk factors for cancers of oropharyngeal region.² Association of edentulous persons using unhygienic denture and incidence of oral squamous cell carcinoma seems to be non-significant, which is in line with other studies in different regions of globe^{11,12,13} A strong association was found with poor oral hygiene associated with gum bleeding during tooth brushing and oral squamous cell carcinoma. In one study author reported that around 50% had 3 mm or more dental calculus or tartar and 28% chronic gingivitis in oral cancer cases¹² indicating that patients having poor oral care and health have increased risks of oral cancer. Other studies carried from Brazil¹³ and in India² showed increased oral cancer risk among subjects with poor oral hygiene practices, similar to the findings of the present study. Those patients who had never attended dental visits had a higher risk of oral cancer than subjects who reported a visit at least one or two times in a year^{11,12} Frequency of dental visits indicates one's carefulness about his/ her oral health, and also helps in controlling the oral diseases from beginning. Dental checkup and consultation helps in prevention of oral mucosa from exposure to certain carcinogenic factors. A co linearity exist between the variables such as frequency of gingival bleeding and frequency of dentist visits and treatments, since subjects with poor oral health are probably those who do not often attend dental visits. On the other hand, findings for tooth brushing could be down played, considering that subjects with gingival diseases are less likely to brush their teeth because of fear of gingival bleeding.

Incidence of squamous cell carcinoma of oral cavity was 3-times higher in persons frequently using alcohol based mouthwash compared to occasional users, which is confirmed by Winn et al¹⁴ (2001). Mouthwash products cause chemical aggression of the cells as it remains in contact with the oral mucosa like other alcoholic beverages.

Frequent users of mouthwash products also have higher risk of pharyngeal cancer than mouth cancer similar to persons consuming alcohol. A higher consumption of mouth rinse is found among persons physically depending on attendants for their oral hygiene maintenance, since they can use chemical oral health measures only. In some brands of mouthwash alcohols persists as much as 27% to dissolve and preserve other components. During mouthwash consumption most of people gargle with product which causes direct mucosal contact irritation of pharyngeal region. Special precaution should be kept for differences that may exist between mouth and pharynx mucosal tissue, effects of alcohol, either in beverages or in mouthwash, on subsequent anatomical sites and the mechanisms of alcohol carcinogenesis role of acetaldehyde, in DNA damage, as well as altered chemo kinesis regarding immune pattern. Study sample noticed difference in oral health status and practices before and after the diagnosis of disease (oral cancer for cases and other diseases for controls). Oral cancer patients perceived different patterns of gingival bleeding and oral health maintenance due to pain and growth of cancerous lesion Neoplasia of oral cavity make oral care very difficult so contribute for the development of gingivitis and, consequently, to poor oral health. On the other hand reduced mouth opening, associated with lesions of advanced stages further complicate the oral hygiene practice, leads to bad oral odor which makes patients force to use chemical cleaning agent such as mouthwash. Effects of ethanol and non-ethanol compounds on incidence of oral squamous cell carcinoma need to be further explored, with a special interest on genetic basis of carcinogenesis.

CONCLUSION

To conclude, poor oral hygiene, no dental visits and dependence on mouthwash for oral hygiene maintenance are highly associated with oral squamous cell carcinoma incidence and progression. As a dentist we must secure the proper oral health maintenance and hence adding quality life for carcinoma patients. Government should plan to work on policies, so that oral health education, its importance, and implication of oral hygiene measures should reach at terminal rural areas.

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