

Prevalence of oral cancer among patients using different forms of tobacco - A retrospective study

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ABSTRACT

Aim: The aim of this study was to determine the prevalence of oral cancer among patients who used different forms of tobacco. **Materials and Methods:** This was a cross-sectional retrospective study of oral cancer patients who reported during January 2016–October 2018 to private institution. In the department of oral medicine and radiology, trained dental surgeons collect the data using a combination of clinical oral examination and standardized questionnaire. Information on habits and other characteristics of the study participants were acquired using the standardized, interviewer-based questionnaire. **Results:** This study found that 419 patients have oral lesions and oral cancer. Potentially malignant disorders were found in 3.7% and oral cancer to be 2.1% of the study subjects. In this study, oral submucous fibrosis was found to be most common soft tissue lesion with the prevalence being 0.41%. Stomatitis palatine (0.34%) and leukoplakia (0.30%) were the second and third most common lesions. Majority of the oral cancer was found among people aged from 31 to 60 years. **Conclusion:** The prevalence of oral cancer was higher among elderly males predominantly with risk habits of betel quid/tobacco chewing and smoking.

KEY WORDS: Oral cancer, Potentially malignant disorders, Premalignant lesions, Premalignant conditions

INTRODUCTION

Oral disease is the sixth most basic oral cancer worldwide and demonstrates checked geographic variety in event.^[1] Oral malignancy is of vital significance to dental experts and establishes a noteworthy general medical issue in India as regular disease site seen by Indian malignancy vaults.^[2] Epidemiological examinations have demonstrated that occurrence of oral disease shifts significantly in various mainlands, and furthermore among created and creating nations, high rate rates were accounted for in Asia region (India, Sri Lanka, Pakistan, and Taiwan), parts of Europe (France, Hungary, Slovakia, and Slovenia), parts of Latin America and the Caribbean (Brazil, Uruguay, and Puerto Rico), and in the Pacific region (Melanesia and Papua New Guinea) generally credited to introduction to specific risk factors for oral cancer.^[1]

The higher prevalence of oral cancer in India as one of the five leading diseases in either sex is identified with the utilization of tobacco in different

forms, utilization of liquor and low financial condition identified with poor hygiene, poor diet or contaminations of viral origin.^[3,4] The most across the board type of tobacco is biting of betel quid with tobacco, and this has been exhibited as a noteworthy hazard factor for malignancy of oral cavity.^[4,5] Betel quid with or without tobacco is one of the free significant hazard factors for oral cancer.^[6,7] In nations where such habits were predominant and had social significance in customary and religious ceremonies, oral disease was a standout among the most well-known tumors.^[8,9] Aside from tobacco use ill-fitting dentures, poor oral hygiene, syphilis, inadequate diet, hunger, and constant disturbance from unpleasant or broken teeth were accounted for all the more often in oral cancer patients.^[10] Smoking, drinking, and biting have been positively associated with oral lesions, for example, oral submucous fibrosis (OSF), leukoplakia, and oral lichen planus, which has the potential for harmful change.^[11-18] The predominance of OSF in India differs somewhere in the range of 0.03% and 3.2% as indicated by different investigations directed here.^[16,19-23] In addition, higher event of leukoplakia and malignant growth is seen in OSF patients and it is accepted to be an important risk factor for oral disease among young people.

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The investigation of geographic varieties of cancer risk in India with a tremendous population of different societies, habits, and dietary practices should be especially productive in creating etiological hypothesis that could open the doors for examination of at least one malignant growth. Hence, distinct oral cancer information for every specific geographic region are vital for some reasons, including understanding the extent of the issue, figuring out which groups inside the population are at most highest and lowest hazard, and relating the burden of oral cancer to that of different tumors to assess the allocation of assets for research, prevention, treatment, and support administrations. The promptly accessible far-reaching wellspring of data on oral malignant growth event and absence of past detailed investigations from this part of the country identified with greatness and qualities of oral cancer centered to actualize the present retrospective study based on 10 years' institutional records. Regardless of the limitation of institutional records as wellspring of oral malignancy morbidity compared with population-based epidemiological investigation, an effort was made to examine risk habits among oral cancer patients announced during the year January 2016–2018 to cancer institution, Chennai, Tamil Nadu, India.

MATERIALS AND METHODS

The present retrospective study on oral cancer was conducted at private institution, Chennai, Tamil Nadu, India, from January 2016 to 2018. In the department of oral medicine and radiology, trained dental surgeons collect the data using a combination of clinical oral examination and standardized questionnaire. Based on the availability of primary information on oral cancer cases recorded in the case records by the concerned authority at private institution from January 2016 to 2018, secondary data collection pro forma was designed to include the following: Reported risk habits/frequency/duration. They were found that 419 patients have oral lesions and oral cancer. Information on habits and other characteristics of the study participants were acquired using the standardized, interviewer-based questionnaire.

Statistical Analysis

The data collected were thoroughly checked and entered into Excel spreadsheets and analysis was carried out. Prevalence of oral lesions, cancer, and habits was estimated using STATA statistical software version 7.0 (STATA Corporation 2001). Proportions and percentages were calculated.

RESULTS

Table 1 shows that distribution of study subjects by gender. There were more males (58.9%) than females

(41%). The overall prevalence of smoking, chewing, and drinking alcoholic beverages was 8.3%, 11.7, and 6.9%, respectively. In this study, men population were more prevalent (7.6%) than female (1.4%) [Table 2]. In this study, men population were more prevalent (7.6%) than female (1.4%). Majority of the oral cancer was found among people aged from 41 to 60 years. The prevalence of smoking is highest among the age group of 20–30 years (11.2%), higher being the age group of 41–50 years (8.1%) [Table 3]. The prevalence of smoking is highest among the age group of 20–30 years (11.2%), higher being the age group of 41–50 years (8.1%). More than 7 of 10 smokers use unfiltered cigarettes, as compared to the other types, namely filtered cigarette, cigar, and bedi. In this population, alcohol consumption was higher in the age group of 31–40 years (6.9%), and the highest being the age group of 51–60 years (8.1%). The chewing habit was highest in the age group of 51–60 years (12.4%) and higher in the age group of 41–50 years (11.6%). The study participants were more likely to chew pan masala (36%) when compared to Gutka (14%), areca nut (21%), and betel leaf and lime (29%) as shown in Table 4. Potentially malignant disorders were found in 3.7% and oral cancer to be 2.1% of the study subjects. In this study, OSF was found to be most common

Table 1: Distribution of study subjects

Gender	Number (%)
Male	247 (58.9)
Female	172 (41)
Total	419 (100)

Table 2: Prevalence of oral cancer by gender

Oral cancer	Number (%)
Male	32 (7.6)
Female	6 (1.4)
Total	38 (2.1)

Table 3: Prevalence of habits by age group

Age group (years)	Smokers (%)	Chewers (%)	Alcohol (%)
20–30	11.2	8.3	4.2
31–40	6.9	10	6.9
41–50	8.1	11.6	4
51–60	3.3	12.4	8.1
61–70	3.3	5.7	4.7
71–85	2.1	1.4	1.1
Total	8.3	11.7	6.9

Table 4: Prevalence of different type of chewing habits

Products	Percentage
Gutka	14
Pan	36
Areca nut	21
Betal leaf and lime	29
Total	23.8

soft tissue lesion with the prevalence being 0.41%. Stomatitis palatine (0.34%) and leukoplakia (0.30%) were the second and third most common lesions. Table 5 shows that the prevalence of all lesions is more common in men when compared to women. Among men, OSF (1.63%) and smokers palate (1.26%) were more prevalent compared to other soft tissue lesions, whereas among women, lichen planus (0.5%) and leukoplakia (0.39%) were more prevalent.

DISCUSSION

The characteristics of oral cancer patients in this study have a typical pattern as described in the literature reported in older age group >50 years, higher among males, and commonly associated with risk habits. The incidence of oral cancer increases with age, predominantly in people aged 40 years and above. This has generally been attributed to indiscriminate substance abuse, particularly, use of tobacco-related products over a considerable period of time. While most studies reported a mean age of more than 60 years old,^[19] recent studies in India have shown an increase in the incidence of oral cancer in younger age group with mean age of 51 years old.^[9] This variation in the mean age of oral cancer patients may reflect either early detection of the lesion by improved screening programs or an increase in incidence among the younger age groups due to early exposure of deleterious risk habits. The male-to-female ratio of 2:1 is lower than the range of oral cancer incidence rate ratios other than in India between 3 and 10 and higher than approximately 1 (Madras) or lower than 0.5 (Bengaluru). Such very high incidence rates in Indian women reflect the persistent importance in India of pan chewing innocuous habit with sociocultural acceptance equally common in both genders.^[20] Majority (77%) of the patients were from rural area which is comparable to study by Winn *et al.*^[21] and contrasted to Vogler *et al.*^[22] study with more urban patients.

The cross-sectional studies are important in estimating the prevalence of a disease in the population and identifying the high-risk subpopulation. In this sample, the prevalence of potentially malignant disorder was 3.7% and oral cancer was 2.1%, with the prevalence being greater for males than females. The prevalence of leukoplakia (0.30%), OSF (0.41%),

and oral lichen planus (0.17%) in our study population is similar to those found in other previous studies conducted in India.^[23,24] Among the total patients, 75% had risk habits and 25% were habit free, which is less than 84.5% with habits; Zachariah *et al.*^[24] reported a prevalence of 15.5% of subjects who were free from habit and more than 51% who had the habit. Winn *et al.*^[21] reported a prevalence of 49% who had the habit. The reason for higher proportion of patients with habits is probably related to the early initiation of betel nut/tobacco use, especially in chewing form due to its easy availability, low cost, and sociocultural acceptance. Even though the age of commencement of chewing habit was not specified, the data from various cancer hospitals in India showed that mean age of the commencement of chewing was 22 years in males and 25 years in females with oral cancer. Majority 55% of the patients had risk habits for more than 10 years.^[25] Stepwise analysis found that duration of risk habit was more important than frequency in determining the potential risk of the habit for oral cancer causation and^[26] reported great risk of oral cancer with great number of years of tobacco quid chewing. The frequency of a habit along with duration would be more important in determining the severity of the effects in relation to oral cancer.

The prevalence of chewing (11.7%) in our study population was higher when compared to the results reported by Neufeld *et al.* using the Indian National Sample Survey Sample.^[27] However, the prevalence of smoking (8.3%) and alcohol consumption (6.9%) was found to be lower. Smoking and chewing were significant predictors of oral cancer in this population. However, the association between alcohol consumption and presence of oral cancer was not statistically significant. In the present study, females were more likely to chew when compare/d to the other two habits. Furthermore, the study shows that smoking is more prevalent in men when compared to the other two habits. Findings from the present study are similar to that of Hashibe *et al.*^[28] with regard to chewing and smoking habit being significant predictors of oral cancer. However, consumption of alcoholic beverages did not prove to be a significant predictor as found in the studies by Hashibe *et al.* and Gupta.^[28,29] Data were collected from a hospital record, which involved oral examination and questionnaire administration. Since the information on the habits was gathered through

Table 5: Prevalence of potentially malignant disorders by gender

Potentially malignant disorders	Male (%)	Female (%)	Total prevalence (%)
Oralsubmucous fibrosis	1.63	0.27	0.41
Leukoplakia	0.9	0.39	0.30
Lichen planus	0.25	0.5	0.17
Candidiasis	0.6	0.02	0.14
Smoker's palate	1.26	0.2	0.34
Smoker's melanosis	0.65	0	0.15

questionnaire, there could be information bias, but this could only bias our results toward the null. In this study, detailed information could not be gathered on other predictors of oral lesions such as nutritional status and body mass index; a more detailed and case-control study is required to better understand the oral lesions and habit association in this population.

CONCLUSION

Notwithstanding the methodological limitations, this retrospective study is first to report on risk habits among oral cancer patients who were reported to private cancer center and the prevalence of oral cancer was higher among elderly males predominantly with risk habits of betel quid/tobacco chewing and smoking. This baseline data provide a prospect of averting oral cancer by risk habit control. This study implicates seriousness of the need to implement and sustain appropriate oral cancer preventive measures including health education to the public emphasizing on early symptoms, risk habits particularly tobacco chewing/smoking, self-examination instructions, regular visits to the dentist, and oral cancer. Programs to improve oral health should be conducted regularly to promote oral health care in the population.

REFERENCES

1. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol* 2008;44:309-16.
2. Indian Council of Medical Research. National Cancer Registry Programme. Biannual Report, 1987-1989. New Delhi: Indian Council of Medical Research; 1992.
3. Mehrotra R, Singh M, Kumar D. Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. *Indian J Med Sci* 2003;57:400-4.
4. Gupta PC. Mouth cancer in India: A new epidemic? *J Indian Med Assoc* 1999;97:370-3.
5. Balam P, Sridhar H, Rajkumar T, Vaccarella S, Herrero R, Nandakumar A, *et al.* Oral cancer in Southern India: The influence of smoking, drinking, paan chewing and oral hygiene. *Int J Cancer* 2002;98:440-5.
6. Gupta PC, Mehta FS. Comparison of carcinogenicity of betel quid with or without tobacco: A review. *Ecol Dis* 1982;1:213-9.
7. Jacob BJ, Straif K, Thomas G, Ramadas K, Mathew B. Betel quid without tobacco as a risk factor for oral precancers. *Oral Oncol* 2004;40:697-704.
8. Ariyawardana A, Sitheequ M, Ranasinghe A, Perera I, Tilakaratne WM, Amaratunga EA, *et al.* Prevalence of oral cancer and pre-cancer and associated risk factors among tea estate workers in the central Sri Lanka. *J Oral Pathol Med* 2007;36:581-7.
9. Subapriya R, Thangavelu A, Mathavan B, Ramachandran CR, Nagini S. Assessment of risk factors for oral squamous cell carcinoma in Chidambaram, Southern India: A case-control study. *Eur J Cancer Prev* 2007;16:251-6.
10. Ko YC, Huang YL, Lee CH, Chen MJ, Lin LM, Tsai CC, *et al.* Betel quid chewing, cigarette smoking and alcohol consumption related to oral cancer in Taiwan. *J Oral Pathol Med* 1995;24:450-3.
11. Gangadhran P, Paymaster JC. Leukoplakia-an epidemiologic study of 1504 cases observed at the tata memorial hospital, Bombay, India. *Br J Cancer* 1971;25:657-68.
12. Gupta PC, Mehta FS, Daftary DK, Pindborg JJ, Bhonsle RB, Jalnawalla PN, *et al.* Incidence rates of oral cancer and natural history in a 10-year follow up study of Indian villages. *Commun Dent Oral Epidemiol* 1980;8:287-333.
13. Gupta PC, Bhonsle RB, Murti PR, Daftary DK, Mehta FS, Pindborg JJ. An epidemiologic assessment of cancer risk in oral precancerous lesions in India with special reference to nodular leukoplakia. *Cancer* 1989;63:2247-52.
14. Kramer IR, Lucas RB, Pindborg JJ, Sobin LH. WHO collaborating centre of oral precancerous lesions, definition of leukoplakia and related lesions: An aid to studies on oral precancer. *Oral Surg Oral Med Oral Pathol* 1978;46:568-9.
15. Malaowalla AM, Silverman S Jr., Mani NJ, Bilimorai KF, Smith LW. Oral cancer in 57,518 industrial workers of Gujarat, India: A prevalence and follow up study. *Cancer* 1976;7:1882-6.
16. Mehta FS, Gupta PC, Daftary DK, Pindborg JJ, Choksi SK. An epidemiological study of oral cancer. *Int J Cancer* 1972;10:134-41.
17. Murti PR, Bhonsle RB, Pindborg JJ, Daftary DK, Gupta PC, Mehta FS. Malignant transformation in oral submucous fibrosis over a 17-year period. *Commun Dent Oral Epidemiol* 1984;13:340-1.
18. Pindborg JJ, Murti PR, Bhonsle RB, Gupta PC, Daftary DK, Mehta FS. Oral submucous fibrosis as precancerous condition. *Scand J Dent Res* 1984;92:224-9.
19. Arbes SJ, Olshan AF, Caplan DJ. Factors contributing to the poorer survival of black Americans diagnosed with oral cancer (United States). *Cancer Causes Control* 1999;10:513-23.
20. Franceschi S, Bidoli E, Herrero R. Comparison of cancers of the oral cavity and pharynx worldwide: Etiological clues. *Oral Oncol* 2000;36:106-15.
21. Winn DM, Blot WJ, Shy CM, Pickle LW, Toledo A, Fraumeni JF Jr. Snuff dipping and oral cancer among women in the Southern United States. *N Engl J Med* 1981;304:745-9.
22. Vogler WR, Lloyd JW, Milmore BK. A retrospective study of etiological factors in cancer of the mouth pharynx and larynx. *Cancer* 1962;13:246-58.
23. Pindborg JJ, Chavla TN, Mishra RK, Nagpaul RK, Gupta VK. Frequency of oral carcinoma, leukokeratosis, leukoedema, submucous fibrosis and lichen planus in 10,000 Indians in Lucknow, Uttar Pradesh, India: Report. *J Dent Res* 1965;44:625.
24. Zachariah J, Mathew B, Varma NA, Iqbal AM, Pindborg JJ. Frequency of oral mucosal lesions among 5000 individuals in Trivandrum, South India. *J Indian Dent Assoc* 1966;38:290-4.
25. Sankaranarayanan R. Oral cancer in India: An epidemiology and clinical review. *Oral Surg Oral Med Oral Pathol* 1990;69:325-30.
26. Castellsague X, Quintana MJ, Martinez MC. The role of type of tobacco and type of alcoholic beverage in oral carcinogenesis. *Int J Cancer* 2004;108:741-9.
27. Neufeld KJ, Peters DH, Rani M, Bonu S, Bronner RK. Regular use of alcohol and tobacco in India and its association with age, gender, and poverty. *Drug Alcohol Depend* 2005;77:283-91.
28. Hashibe M, Sankaranarayanan R, Thomas G, Kuruvilla B, Mathew B, Somanathan T, *et al.* Alcohol drinking, body mass index and the risk of oral leukoplakia in an Indian population. *Int J Cancer* 2000;88:129-34.
29. Gupta PC. Epidemiologic study of the association between alcohol habits and oral leukoplakia. *Commun Dent Oral Epidemiol* 1984;12:47-50.

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