

Original Article

Clinico-epidemiological profile of oral cancer: A hospital based studyAgrawal KH¹, Rajderkar SS²¹Assistant Professor, Department of Community Medicine, ACPM Medical College, Dhule,²Professor and Dean, Department of PSM, Government Medical College, Miraj, Maharashtra, India.**Abstract:**

Background: India is heading towards various types of non-communicable diseases, which are also known as modern epidemics. Among these modern epidemics cancer is among the ten commonest cause of mortality in developing countries including India. Oral cancer is a major problem in India and accounts for 50-70% of all the cancers diagnosed. Ninety percent (90%) of oral cancers in South East Asia including India are linked to tobacco chewing and tobacco smoking. Research question: What is the profile of Oral cancer (Oral cavity) cases reported in the hospital?

Objective: To study the clinico-epidemiological profile associated with Oral cancer cases.

Methods: Study Design: Hospital based, Cross-sectional study. Settings: Shri Siddhivinayak Ganapati Cancer Hospital, Miraj, Maharashtra. Participants and Sample size: As it is a time bound study sample size comprised of all the confirmed cases of oral cancer reported in the hospital during the study period. The study was carried out from 1st March 2005 to 28th February 2006. Study variables included demographic factors, socioeconomic factors, enquiries regarding modifiable risk factors such as tobacco usage, alcohol consumption, site involved (within oral cavity), staging, histopathological examination, treatment modality used. Data entry and statistical analysis was done using Microsoft excel. Data presented in form of percentages and proportions.

Results: Out of the total 160 cases, majority of the subjects were above 40 years age. 36 (22%) of subjects were young adults (below 40 years age). 125 (78%) subjects were male. Most of the subjects belonged to upper lower and lower middle socio-economic scale according to modified Kuppuswamy classification. It was observed that 139 (87%) cases consumed tobacco in all forms. Out of these, ninety cases consumed tobacco in chewable form. Tobacco was chewed mainly in the form of gutka. Only ten (10) female subjects chewed tobacco. No female subjects smoked. The most common site for oral cancer was tongue. Histopathologically 52 (32.5%) cases were well differentiated squamous cell carcinoma, 37 (23%) cases were moderately differentiated squamous cell carcinoma and 34 (21%) cases as poorly differentiated squamous cell carcinoma. 37 (23%) cases were diagnosed as Oral Verrucous Carcinoma (a rare variant of Oral Squamous Cell Carcinoma). 72% cases were in either stage II or stage III.

Conclusions: The most common site for oral cancer was tongue and histopathologically majority of the cases were well differentiated squamous cell carcinoma presented in advanced stages of disease. We observed higher proportion of oral cancers among young patients (below 40 years). Proportion of Oral Verrucous Carcinoma (OVC) which is a rare variant of Oral Squamous Cell Carcinoma was also high in the study.

Key-words: Oral cancers, tobacco use, Oral Verrucous Carcinoma, Younger patients, Western Maharashtra.

Introduction:

Health scenario in India appears to be in a triple disadvantage state. The communicable diseases still continue to cause morbidity and mortality, though on smaller scale compared to past. Even before it has been possible to bring them under total control, non-communicable diseases are showing an ever increasing incidence. In addition, some new diseases, unknown in the past, have started causing outbreaks¹. Avian influenza (bird flu) can be a prime example of this.

Further to it, India is heading towards various types of non-communicable diseases, which are also known as modern epidemics. Among these modern epidemics cancer

is among the ten commonest cause of mortality in developing countries including India. Additionally, it is the second commonest cause of mortality in developed countries². Based on Cancer statistics, Oral cancer is a major problem in India and accounts for 50-70% of all the cancers diagnosed as compared to 2-3% in UK and USA³. The age standardized incidence rate of oral cancer in India is highest in the world, being 6.2/100000 in males and 4.6/100000 in females⁴. Approximately ninety percent (90%) of oral cancers in South East Asia are linked to tobacco chewing and tobacco smoking³.

The non-formal enquiries regarding the magnitude of cancers in Sangli-Miraj-Kupwad municipal corporation

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area in Maharashtra revealed that the oral cancers are increasingly seen in both genders and at an increasingly earlier age in certain cases. This observation is of a recent origin perceptibly noted by the oncologists since last few years. When this fact was explored further, it was found to be worth verifying. Also the available literature indicated no such study on oral cancer in Western Maharashtra which includes Sangli-Miraj-Kupwad municipal corporation. With this background and coupled with the fact that western Maharashtra is one of the important hub for tobacco manufacturing the present study was conducted.

Subjects and Methods:

The present Hospital based, Cross-sectional study was carried out in the department of Oncology at Shri Siddhivinayak Ganapati Cancer Hospital, Miraj, Maharashtra. The hospital is a tertiary cancer care center situated in Sangli-Miraj-Kupwad municipal corporation area having patient drain within and beyond Maharashtra state. Approval of hospital ethical committee was taken before conducting the study. The study was carried out for the period of one year from 1st March 2005 to 28th February 2006. Out of one thousand eight hundred and ninety one (1891) malignant cases registered in the hospital during the study period, one hundred and sixty (160) patients were detected to have oral cancer. Thus the final sample for the present study comprised of 160 patients suffering from oral cancer reported in the hospital during the study period. Pre-tested and pre-structured questionnaire was administered to these 160 confirmed cases of Oral (Oral cavity) cancer to understand their clinico-epidemiological profile. The information comprised of demographic factors, socioeconomic factors, enquiries regarding modifiable risk factors such as tobacco usage, alcohol consumption, site involved (within oral cavity), staging, histopathological examination, treatment modality used. All records entered were checked, cross-checked and randomly double checked for correctness. Data entry was done by the investigators themselves. A strict 2-stage Quality Check mechanism was instituted –

- In-built checks and balances were introduced in the data entry tool at the time of development.
- 10 % random check of entered data against actual forms.

Software used was Microsoft excel. Data is presented in the form of percentages and proportions.

The analysis of the data was conducted by the investigators. Ethical aspects: In order to maintain the confidentiality of patients following steps were ensured-

- Written informed consent of all patients was obtained.
- All the patients were explained all the facts and were assured that names will be kept secret and only initials will be used for the questionnaire.

Inclusion criteria: Subjects having oral cancer diagnosed till last day of the study in the hospital.

Exclusion criteria:

- Patients diagnosed to have non-malignant conditions.
- Patients diagnosed to have malignancy other than oral cancer.
- Subjects opting not to participate in the study. However, no patient refused to participate. Thus there was 100% response.

Results:

Out of 1891 malignant cases registered in the hospital during the study period, 160 patients were detected to have oral cancer. Thus the total sample size comprised of 160 subjects (n=160) of which 125 (78.13%) were males and 35 (21.87%) were females with male:female ratio of 3.57:1, indicating male predilection. The most common site for oral cancer was tongue (63%), followed by cheek (15.60%), gums (8.10%), vestibule (6.90%) and palate (6.25%). As depicted in Table I, majority of the subjects were above 40 years age, most of them belonged to lower middle and upper lower social class as per modified Kuppuswamy classification. The minimum age of the patient was 27 years; maximum age of the patient was 92 years. It is worth mentioning that 36 (22%) cases were below 40 years age of which 27 (75%) cases were male and 9 (25%) were female. Tobacco and alcohol consumption habits of study subjects are shown in Table II. It was observed that out of total 160 study subjects, 139 (87%) cases consumed tobacco in all forms. Out of these 139 cases, 90 (64.75%) cases consumed tobacco in chewable form, mainly gutka. The other popular chewable form among the patients was khaini. Only 10 female subjects had habit of chewing tobacco mainly in the form of khaini. It is noteworthy that none of the female patient smoked or consumed alcohol. 30 subjects displayed dual habit of tobacco consumption in all forms and alcohol consumption as well. It is important in this context to mention that only 21 (58.3%) out of 36 subjects below 40 years of age consumed tobacco in all forms. Remaining 15 subjects were non-habitues.

Table I: Distribution of Study Subjects according to Demographic characteristics.

Characteristics	Number of subjects (%)
Age in years	
20-30	7 (4.03)
31-40	29 (18.12)
41-50	39 (24.37)
51-60	35 (21.87)
61-70	41 (25.62)
70+	9 (5.62)
Total	160 (100.00)
Gender	
Male	125 (78.13)
Female	35 (21.87)
Total	160 (100.00)
Socio-economic status	
Upper	16 (10.00)
Upper middle	12 (7.5)
Lower middle	46 (28.75)
Upper lower	64 (40.00)
Lower	22 (13.75)
Total	160 (100.00)

Table II: Distribution of Study Subjects according to tobacco and alcohol usage.

Characteristics	Number of Subjects (%)
Tobacco chewing	75 (47.00)
Tobacco smoking	22 (13.75)
Tobacco chewing as well as smoking	12 (7.5)
Tobacco in all forms as well as alcohol consumption	30 (18.75)
Total	139 (86.88)

Table III depicts clinical and pathological characteristics of study subjects. 72% subjects were in either stage II or stage III of TNM classification. Histopathologically, 52 (32.50%) subjects were diagnosed as well differentiated squamous cell carcinoma, 37 (23.10%) as moderately differentiated squamous cell carcinoma, 34 (21.20%) as poorly differentiated squamous cell carcinoma. It is notable here that 37 (23.10%) cases were diagnosed as Oral Verrucous Carcinoma (OVC) a rare variant of Oral Squamous Cell Carcinoma. In 30 subjects (18.75%), combination therapy in the form of surgery and radiotherapy was used.

Table III: Distribution of Study Subjects according to Clinical and Pathological Characteristics.

Staging (TNM)	Number of Subjects (%)
Stage I	45 (28.13)
Stage II	85 (53.13)
Stage III	30 (18.75)
Total	160 (100.00)
Histopathology	
Well differentiated squamous cell carcinoma	52 (32.50)
Verrucous Carcinoma	37 (23.10)
Moderately differentiated squamous cell carcinoma	37 (23.10)
Poorly differentiated squamous cell carcinoma	34 (21.25)
Total	160 (100.00)
Diagnostic tool	
Histopathology examination	160
Treatment modality	
Surgery	130 (81.25)
Surgery+ Radiotherapy	30 (18.75)
Chemotherapy	0 (0.00)
Surgery+ Radiotherapy +Chemotherapy	0 (0.00)
Total	160 (100.00)

Discussion:

Oral cancer is one of the commonest cancers among males in India^{5,6} and accounts for 50-70% of total cancer mortality². High proportion of cases among males may be due to high prevalence of tobacco consumption in all forms among males. Comparatively females in Indian society are less indulged in tobacco smoking and alcohol consumption; however a rising trend is seen in recent times⁷. Khandekar et al have shown similar findings in their study². Most of the subjects belonged to lower middle and upper lower socio-economic class. Prevalence of tobacco use is also

more common among lower socio-economic group and those who were less educated in studies conducted by Thankappan et al and Daniel et al^{7,8}. The low socio-economic status may also be a risk factor for poor oral hygiene thereby further increasing the risk of oral cancer in tobacco consumers. Balaram et al have shown similar findings in their study⁹. In our study the most common site for oral cancer was tongue followed by cheek. Majority of the subjects consumed tobacco in some form or the other which goes with the fact that tobacco consumption is a well established risk factor for development of Oral cancer¹⁰. The common sites of oral cancer in India is related to typical habit of consuming smokeless tobacco in the form of betel quid, gutka, mawa, zarda, khaini and snuf. Many of these products are chewed while some are applied in the oral cavity. The tobacco product is usually placed under lip or against the cheek from where it is gradually absorbed after dilution with saliva. Smokeless tobacco contains over 2000 chemicals, many of which have been directly related to cause cancer. The tongue particularly the side of the tongue, cheeks are the site of maximum insult and thus are affected most of the time¹¹.

Though, oral cancer occur at a site which is accessible for clinical examination and amenable to diagnosis by current diagnostic tools, the crux of the problem is that majority of the cases report late to the health care facility as evident from the findings of present study. This reduces the chances of survival because detecting oral cancer in early stages, when these are amenable to single modality therapies, offers the best chance of long term survival¹². As a secondary prevention awareness can be created among general population for early signs of oral cancer and availability of treatment. The histopathologic analysis of cases showed that majority of the cases had squamous cell carcinoma. This finding is in conjunction with the findings of all the Hospital Based Cancer Registries across India¹³. Kalyani et al reports in their study that histologically almost all cases of oral cavity cancer were squamous cell carcinoma¹⁴. More than 95% of the carcinomas of oral cavity are of squamous cell type, in nature¹⁵. We observe in our study that though majority were squamous cell type, all were not squamous type. Histologically, proportion of Oral Verrucous Carcinoma (OVC) was also high. OVC is a rare variant of Oral squamous cell carcinoma. First described by Ackermann in 1948, is distinct in its slow growth and ability to become locally aggressive. Regional or distant metastasis is rare. Prognosis is better than squamous type. OVC has distinct histopathologic features¹⁶. The etiology of Verrucous

Carcinoma is not well defined. Human Papilloma Virus (HPV) has been considered one of the causative factors. Smoking seems highly associated with the development of oral mucosal Verrucous Carcinoma. Poor oral hygiene, presence of oral lichenoid, and leukoplakic lesions may act as predisposing factors¹⁷. More in-depth studies are needed to investigate the etiology of OVC.

Oral cancer in young patients under 40 years forms about 22% of all cases of oral cancer in the present study. Iype et al observed it to be 2.8% in their study⁵, while it is 0.4% to 5% in Western series^{18,19}. There is an overall male predominance in this age group with male: female ratio of 3:1

About 42% study subjects in this age group were non-habitues (for tobacco in all forms and alcohol). Sherin et al finds 34% of the study subjects below 40 years as non-habitues in their study²⁰. The most common site for oral cancer was tongue followed by cheek in this age group. Review of literature indicates that factors other than tobacco and alcohol are involved in etiology of oral cancer especially tongue. These postulated factors are immune deficiency and genetic factors²¹. More in-depth studies are needed to investigate the etiology of intraoral cancer in younger patients. Larger studies, both institution and community based, will help to understand the true spectrum of this disease in this age group and probably help devise effective strategies at controlling it. Any ulcer or lesion at a younger age should not be dismissed easily, even if it is not habit related. High index of clinical suspicion in high incidence areas should lead to further investigation in order to identify the disease in early stage, which is perhaps the only way to ensure good prognosis.

Conclusions:

The most common site for oral cancer was tongue and histopathologically majority of the cases were well differentiated squamous cell carcinoma presented in advanced stages of disease. As a secondary prevention awareness can be created among general population for early signs of oral cancer and availability of treatment. Proportion of oral cancers among young patients (below 40 years) and of Oral Verrucous Carcinoma (OVC) among the study subjects (a rare variant of Oral Squamous Cell Carcinoma) was also high in the study. More, larger in-depth studies are needed to investigate the etiology of intraoral cancer in younger patients and etiology of Oral Verrucous Carcinoma.

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CORRIGENDUM

This corrigendum/erratum is being published for the concerned authors as well as for all the readers of IJCH as per the policy guidelines of IJCH.

An original article entitled "A study of knowledge and awareness regarding Pulmonary Tuberculosis in patients under treatment for Tuberculosis in a rural area of Aligarh", authored by Salman Khalil, Ehtisham Ahmad, Zulfia Khan, Naheed Perwin, was published in **IJCH – Vol.23, No.2; July 2011 - Dec 2011: p. 93-95** both in **Print** as well as **Electronic** (www.iapsmupuk.org) version of IJCH.

Description of correction:

The correct chronological sequencing of authors for the said article may be read as-

Ahmad E, Khalil S, Khan Z, Perwin N.

Dr. C. M. Singh
Chief Editor
Indian Journal of Community Health