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A study to assess Clinical and Socio-Demographic profile of oral cancer patients from central India

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Abstract
Background: India is the leading country in world with continuously increasing trends of oral cancer cases. It is well established fact that survival for suffer is very poor if the advanced stage of oral cancer was reached. The purpose of the study was to assess the clinical profile of oral cancer cases and its related epidemiological features. **Material and Methods:** A Hospital based Cross-Sectional study was conducted from 1st March 2018 to 28th February 2019 in the Department of Radiotherapy of Jaya Arogya (J.A.) Group of Hospitals and Department of Surgical Oncology at Cancer Hospital and Research Institute Jan Vikas Nyas, Gwalior. A total of 340 participants were interviewed by a pre designed structured questionnaire. Appropriate statistical tests were applied and the result was considered at 5 % level of significance. **Results:** The mean age of the patients was 47.68(±11.558) years with 91.47% were males and 8.53 % were females. The most common first symptom felt by the patients was ulcers in mouth (82.4%) and difficulty in swallowing (5.3%) were .The buccal mucosa (46.5%) and tongue (41.2%) were the most affected sites. The majority of cases were from low socio economic classes and were of advanced stage (Stage III and IV) with Stage III being the predominant stage at presentation followed by Stage IV. **Conclusion:** Oral cancer was more common in males above 40 years of age and more common among rural patients from low socioeconomic class. The ulcers in mouth was found as the most common first symptom reported by the patients .The Buccal mucosa was the most common site and mostly patients were from Stage III and Stage IV Category.
Keywords: Age; Female; Male; Patients; Stage.

Introduction

Oral cancer is a malignant neoplasm which is found on the floor of the mouth, lip, gingiva, cheek lining, palate or on the tongue[1].Oral Cancer is among the leading site of cancer after Lung cancer among the males which is diagnosed in India[2]. In India, twenty people per one lakh population are affected by oral cancer which accounts for about 30% of all types of cancer[3]. According to the Globocan Cancer statistics,2020 which reports that the incidence of Lip, oral cavity cancer in India was 10.3% (135929) while among males it was 16.2 % (104661) in males and 4.6% (31268) in female [4].In India registration of cancer cases is not mandatory, so the true incidence of cases and mortality rate might be higher, as many cases were not in records and loose follow up[5]. In many underdeveloped countries, including India, most of the people do not have access to facilities to go and report to an organized functioning and well-regulated system. A diagnosis of cancer often leads to high personal out of pocket health expenditures. Such type of expenditures could push entire family below the poverty line and may threaten the social stability[6]. Important research into oral and oropharyngeal cancer was underway in many Universities, Hospitals, Medical centres and other institutions around the country. Year after year, scientists were involved in finding more solutions to prevent it, improve its treatment. Oral cancer was considered to be a disease which occurs only in elderly people. The most frequent age group was

from 50 to 70 years but would also affect children of 10 years or less. Oral cancer incidence increases by age[7]. The most typical was the fifth decade of life[8].Considering the gender in all the age groups, men were more affected than women. In India, men were two to four times more affected than women due to the changes in the behavioural and lifestyle patterns. The present study describes the various risk factors associated with oral cancer. Considering these aspects the present study has been undertaken with the following objectives: To study the clinical, Socio-demographic profile of oral cancer patients and its correlates with gender.

Material and Methods

The present study was a hospital based cross-sectional study conducted from 1st March 2018 to 28th February 2019 at Department of Radiotherapy at Jaya Arogya Group of Hospitals and Department of Surgical Oncology at Cancer Hospital and Research Institute Jan Vikas Nyas, Gwalior. These two centres cover patients from different states like Madhya Pradesh, Uttar Pradesh, Rajasthan, Chhattisgarh and Gujarat states. In this study a total of 340 patients were interviewed by predesigned structured questionnaire. Patients who attended hospital for treatment of Oral Cancer after being diagnosed by the concerned Doctor of J.A. Group of Hospitals in Department of Radiotherapy and Department of Surgical Oncology at Cancer Hospital and Research Institute Jan Vikas Nyas, Gwalior and the patients who gave written consent to participate in the study were included while those who were severely ill patients suffering from oral cancer from both the hospitals were excluded from the study. The questionnaire which was used for interview included the general information regarding age, gender, address, religion, caste, education, occupation, total members in the family, Income, marital status, socio-economic status (using Modified B.G.Prasad Classification Scale), type of family, type of diet, the first symptom felt by them and

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for which they consulted any doctor for the first time. Together with these symptoms they were also enquired regarding difficulty in opening the mouth, any co- existing disease, type of lesion, site of cancer, their treatment record and TNM staging. Location of the tumors included the following regions: border of tongue; floor of mouth (with extension to ventral tongue); alveolar mucosa and gingiva (including retromolar area); buccal mucosa (including buccal sulcus/ mucobuccal fold); soft palate and tonsil area; lower lip; and others (in cases with no precise information about the primary location).They were also enquired regarding the treatment advised by the oncology physician or oncology surgeon if they were aware and noted it by the treatment card available in the ward of the concerned hospital by document analysis. Ethical approval was obtained from Institutional Ethical Committee of Gajra Raja Medical College, Gwalior (M.P.) before beginning the study. Data entry was done in Microsoft Excel software. All the information was descriptively analysed and statistical analysis was performed using a standard program SPSS -16. Frequency, Percentage, Chi Square and fisher exact test were applied and significance was seen at 5 % level of significance.

Results

In the present study there were total of 340 participants in which 311 (91.47%) were males and 29 (8.53%) were females. The mean age of all patients with oral cancer was 47.68(±11.558) and median age was 46 years with range (21years -76 years). The mean age for males was 47.36(+11.564) years and for females 51.07(11.135) years. The higher number of patients was found in the 41-60 (55%) years of age group. The majority of the patients were resident of rural area (60%).In the present study the females residing in the rural area were 51.7% while males residing in rural area was 60.8 %. The maximum number of the patients were (92.1%) of Hindu religion. In present study more than $3/5^{th}$ of the patients were literates. The female patients were significantly higher in illiterate group (62.1%) in comparison to males patients which were only 27.3%. Unskilled participants (87.9%) and married (88.8%) were higher. Widow females (24.1%) were significantly more as widower male were only 5.1%. In the present study OBC Caste category (45.59%) patients were higher in number followed by other caste category (28.24%). The lower class and lower middle class patients were more in this study. The dietary habit i.e. vegetarian and non-vegetarian diet was seen as nearly in same proportions for both males and females. (Table 1)

Table 1: Showing Socio - Demographic profile of Oral Cancer Patients

Variables		Total N=340	Female N1=29	Male N2=311	Chi Square/ Fisher exact test, P value
Age Group	21-40	103 (30.3)	6(20.7)	97(31.2)	1.813,0.404
	41-60	187 (55.0)	17(58.6)	170(54.7)	
	>60	50 (14.7)	6(20.7)	44(14.1)	
Area of Residence	Rural	204 (60.0)	15(51.7)	189(60.8)	0.905,0.342
	Urban	136 (40.0)	14(48.3)	122(39.2)	
Religion	Hindu	313 (92.1)	29(100.0)	284(91.3)	2.735,0.148
	others	27 (7.9)	0(0)	27(8.7)	
Education	Illiterate	103 (30.3)	18(62.1)	85(27.3)	15.158,0.0001*
	Literate	237 (69.7)	11(37.9)	226(72.7)	
Occupation	Unskilled	299 (87.9)	29(100.0)	270(86.8)	3.693,0.132
	Skilled	32 (9.4)	0 (0.0)	32 (10.3)	
	Semi-skilled	9 (2.6)	0(0.0)	9(2.9)	
Marital status	Married	302 (88.8)	22(75.9)	280(90.0)	12.021,0.004*
	Unmarried	14 (4.1)	0 (0)	14(4.5)	
	Divorced	1 (0.3)	0 (0)	1(0.3)	
	Widow/Widower	23 (6.8)	7(24.1)	16(5.1)	
Caste	Others	96 (28.24)	7(24.14)	89(28.62)	3.86,0.277
	OBC	155 (45.59)	10(34.48)	145 (46.62)	
	SC	75 (22.06)	10 (34.48)	65 (20.90)	
	ST	14 (4.12)	2 (6.90)	12 (3.86)	
Socio- economic status	Upper	13 (3.8)	0(0.0)	13(4.2)	6.637,0.127
	Upper middle	29 (8.5)	1(3.4)	28(9.0)	
	Middle	52 (15.3)	5(17.2)	47(15.1)	
	Lower middle	116 (34.1)	16(55.2)	100(32.2)	
	Lower	130 (38.2)	7(24.1)	123(39.5)	
Diet	Veg	175 (51.5)	19 (65.5)	156(50.2)	2.504,0.124
	Non-veg	165 (48.5)	10 (34.5)	155 (49.8)	

Among the patients of Oral cancer ; Ulceration(82.4%) was observed as the most common first symptoms followed by difficulty in swallowing(5.3%) followed by Burning sensations in mouth (3.5%) and Swelling in area of head and neck (3.5%).The ulceration was 86.2 %   and 82.0 % respectively for females and males. The first symptoms i.e. difficulty in opening the mouth was showed by the

maximum and they were not able to notified it (61.5%) while 14.4% notified it within six months and 7.1% noted after six to twelve month . Diabetes (3.2%) and Hypertension (3.2%) was found more common among the patients. Diabetes and hypertension prevalence among female patient was 10.3% while among males its prevalence was only 2.6 %.(Table 2)

Table 2: Showing first symptoms, it's time for first notification and co-existing diseases :

Variables		Total N=340	Female N1=29	Male N2=311	Chi square /Fisher's exact Test , P value
First symptom felt by the participants	Ulcer in mouth	280 (82.4)	25(86.2)	255(82.0)	3.355,0.851
	Difficulty in swallowing	18 (5.3)	1(3.4)	17(5.5)	
	Swelling in area of head and neck	12 (3.5)	0(0)	12(3.9)	
	Burning sensations in mouth	12 (3.5)	2(6.9)	10(3.2)	
	Gum bleeding	10 (2.9)	1 (3.4)	9 (2.9)	
	Pain in gums	4 (1.2)	0(0)	4(1.3)	

	Trismus	3 (0.9)	0(0)	3(1.0)	
	Whitish tongue	1 (0.3)	0(0)	1(0.3)	
Time for first notification by the participants for difficulty in opening the mouth	< 6 month	49 (14.4)	6(20.7)	43(13.8)	3.786,0.543
	6-12 month	24 (7.1)	1(3.4)	23(7.4)	
	1-2 year	18 (5.3)	2(6.9)	16(5.1)	
	2-4 year	14 (4.1)	2(6.9)	12(3.9)	
	>4 year	26 (7.6)	3(10.3)	23(7.4)	
	None	209 (61.5)	15(51.7)	194(62.4)	
Co-existing diseases	Diabetes	11 (3.2)	3(10.3)	8(2.6)	9.044,0.021*
	Hypertension	11 (3.2)	3(10.3)	8(2.6)	
	Other co-morbidity	5 (1.5)	0(0.0)	5(1.6)	
	None	313 (92.1)	23(79.3)	290(93.2)	

The Mouth (Buccal Mucosa) was the most affected anatomical site (46.5%), followed by the tongue (41.2%), the Palate (4.4%) Alveolus (2.1%) lip (1.8%) ,cheek (1.8%), Floor of mouth (1.2%), Gingivum (0.6%), Parotid(0.3%) and Oro-pharynx (0.3%).The Stage III patients were highest (47.94%) followed by Stage IV (30%),Stage II (21.47%),Stage I (0.58%).Nearly one fourth (25.6%) patients took treatment Surgery plus radiotherapy,20% patients were on chemotherapy,12.9% undergone Surgery,12.6% were on surgery and chemotherapy combined, Combination of surgery, chemotherapy and radiotherapy was taken by 11.5% of the patients. There were no statistically significant difference in site of cancer, staging and the treatment provided between males and females.(Table 3)

Table 3: Site, TNM staging and type of treatment advised to the patients

Variables		Total N=340	Female N1=29	Male N2=311	Chi square /Fisher exact test, P value
Site of oral cancer	Mouth (Buccal Mucosa)	158 (46.5)	11 (37.9)	147 (47.3)	6.174,0.696
	Tongue	140 (41.2)	16 (55.2)	124 (39.9)	
	Palate	15 (4.4)	1(3.4)	14(4.5)	
	Alveolus	7 (2.1)	0(0)	7(2.3)	
	Cheek	6 (1.8)	0(0)	6(1.9)	
	Lip	6 (1.8)	0 (0)	6 (1.9)	
	Floor of mouth	4 (1.2)	1(3.4)	3(1.0)	
	Gingivum	2 (0.6)	0(0)	2(0.6)	
	Parotid	1 (0.3)	0(0)	1(0.3)	
	Oro-pharynx	1 (0.3)	0(0)	1(0.3)	
TNM staging	I	2 (0.59)	1 (3.45)	1 (0.32)	4.91,0.178
	II	73 (21.47)	6 (20.69)	67 (21.55)	
	III	163 (47.94)	12 (41.38)	151 (48.55)	
	IV	102 (30.0)	10 (34.48)	92 (29.58)	
Type of Treatment advised	Surgery	44 (12.9)	3(10.3)	41(13.2)	2.491,0.880
	Chemotherapy	68 (20.0)	6(20.7)	62(19.9)	
	Radiotherapy	13 (3.8)	1(3.4)	12(3.9)	
	Surgery& Chemo	43 (12.6)	6(20.7)	37(11.9)	
	Surgery & Radio	87 (25.6)	8(27.6)	79(25.4)	
	Chemo & Radio	46 (13.5)	3(10.3)	43(13.8)	
	Surgery, Chemo& Radio	39 (11.5)	2(6.9)	37(11.9)	

Discussion

In the present study the mean age of all the patients with oral cancer was 47.68(±11.558). The study done by Pawar H et al. quoted that the mean age of the study subjects was 51.07(± 14.53) years[9]which is close to the present study. In the present study more than half of the patient was in the 41-60 years of age group. Singh et al also reported that the most affected age group was 51–60 years followed by 41–50 years[10]. In the present study it was noticed that males were more prone towards this fatal neoplasm due to easy access to tobacco products than females because of social-cultural factors. In this study 60% patients were from rural areas and 92.1 % were Hindu. Dhage DH et al findings were similar to the present study in which majority of 51.62% of study subjects were from rural area, 69.37% were Hindu, illiterate were 21.78%[11].In the present study the most needed and recommended treatment Radiotherapy and Surgery which was given to nearly one fourth of the patients. Dhage et al in his study quoted that Radiotherapy and surgery were treatment modalities needed by majority of the patients[11].Ulcers in mouth was observed in 82.4% of the patients. Dhage et al found 92% of the patients having ulcers in mouth. In the present study the Buccal mucosa and tongue was the most affected site. Previously it was reported that the cancer

of tongue and floor of mouth was more common in Western countries while in Indian subcontinent, the buccal mucosa and gingivo buccal sulcus are more commonly affected due to placement of tobacco quid like khaini, gutkha, betel quid etc.; in oral cavity[12].Dhage et al found Buccal mucosa was the most common site for oral cancer lesion followed by tongue, lower alveolus, upper alveolus, lower lip, hard palate and floor of mouth[11].Munde A et al also found buccal mucosa as the most common site[13].This difference in different sites might be fact that the subjects usedto keep the tobacco product at these sites for long duration of time before development of oral cancer. Iype et al also found that tongue and buccal mucosa were the most common sites of cancer among males and females[14].Rai et al found most common site was the buccal mucosa (53.1%) and next frequent site after buccal mucosa was tongue i.e.23 (17.7%)[15]

In the present study as most of the cases were Stage III (47.94%) followed by Stage IV disease (30%).Late diagnosis of carcinoma is a major problem of developing countries especially in India, which adversely affects the treatment outcome[12].In the study by Khandekar S P et al.; the maximum oral cancer subjects were in the advanced stages i.e. Stage III and IV. This might be due to less knowledge or less availability of diagnostic and treatment facilities

Sharma *et al*   International Journal of Health and Clinical Research*,* 2021; 4(11):216-219
www.ijhcr.com
218

[16]. Shenoi R et al found that majority of the patients, i.e., 243 (82.37%) were reported in Stage III, 34 patients (11.53%) reported in Stage II and 18 patients (6.1%) in Stage IV[17].The treatment of oral malignancy primarily depends on the location and size of the tumor, and the feasibility of organ preservation in patients. Radiotherapy and surgery were recommended modalities in the early stages of oral cancer. Prevention, early diagnosis and timely treatment were critical aspects to tackle oral cancer-related burden in India[18].

Conclusion

In the present study the commonest age of presentation of Oral Cancer was in 41-50 years of age group in which males were affected more as compared to females. The maximum numbers of patients were from rural area where health facilities were poor and patients belonged to lower and lower middle socio-economic class. Ulceration in oral cavity was the most common symptom for which patients consulted the doctor. Buccal mucosa was the most common site of Oral Cancer followed by tongue among the participants. The maximum number of patients presented in the advanced stages (Stage III and Stage IV) of oral cancer.

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