Treatment Delay in Oral and Oropharyngeal Cancer in Our Population: The Role of Socio-Economic Factors and Health-Seeking Behaviour

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Abstract The objective is to assess the role of socio-economic factors and health-seeking behavior in treatment delay in oral and oropharyngeal cancer in our population. This article adapts—design: prospective study and setting: tertiary care centre. We studied 153 patients with oral and oropharyngeal squamous cell carcinoma who were managed in the department of otolaryngology and head and neck surgery between January 2006 and December 2007. There were 127 male patients (83%) and 26 females (17%) with ages ranging from 22 years to 70 years. Fifty-nine patients (39%) presented to us with early stage disease (i.e. stage I and II), whereas, 94 patients (61%) presented with late stage disease (i.e. stage III and IV). Of the 59 patients presenting with early stage disease, 20 were illiterate and 39 literate with 28 patients (47%) belonging to low socio-economic status and 32 patients (54%) having an access to primary health centre (PHC). Of the 94 patients presenting with late stage disease, 53 were illiterate and 41 literate with 58 patients (62%) belonging to low socio-economic status and 38 patients (40%) having an access to primary health centre. Literacy, socio-economic status, access to primary health centre and health-seeking behavior of our population has a significant association with the stage of presentation of patients with oral and oropharyngeal cancer.

Keywords Squamous cell carcinoma · Oral cavity · Oropharynx · Head and neck · Socio-economic factors

Introduction

Although, there have been reports of an overall declining incidence of head and neck squamous cell carcinoma (HNSCC) in our population over the past few years, it still remains one of the commonest site for cancer in our country [1, 2]. Amongst the HNSCCs, carcinoma of the oral cavity and oropharynx predominates in our population [1, 3]. This may be attributed to a relatively high prevalence of use of smokeless tobacco in our population [2]. The prognosis of patients with these cancers depends upon a wide range of factors that may be grouped into patient-, tumour- and treatment-related [4]. Amongst the various patient-related factors, the socio-economic factors and health-seeking behavior of the patients may have a direct bearing on the stage of disease at presentation, and thus, on the overall prognosis [5–9]. Most of the data highlighting the role of these factors is attributable to studies in the western literature [5, 7–9]. The relevant literature pertaining to our population is extremely scarce [6]. Due to a significant difference in the socio-economic profile and health-seeking behavior patterns between our population and the western populations, the available data cannot be extrapolated onto our population. The present study is aimed at studying the role of socio-economic factors and health-seeking behavior in treatment delay in oral and oropharyngeal cancer in our population.

Patients and Methods

One hundred and fifty three patients with biopsy proven squamous cell carcinoma of the oral cavity and oropharynx who were treated in the Department of Otolaryngology and Head and Neck Surgery at Maulana Azad Medical College

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and associated Lok Nayak Hospital between January 2006 and December 2007 were included in the study. Patients with other malignancies (i.e. lymphoma, sarcoma, minor salivary gland malignancies) and patients unwilling to comply were excluded.

All the patients underwent a clinical staging in accordance with the TNM system of the American Joint Commission of Cancer Staging [10] at the time of presentation. On the basis of staging, the patients were divided into 2 groups: Group 1 with early stage disease at presentation (i.e. stage I and II) and group 2 with late stage disease at presentation (i.e. stage III and IV).

Age, sex, predisposing factors, previous treatment history, duration of symptoms, clinical evaluation and knowledge of risk factors were recorded. Kuppuswamy classification [11] (Table 1) was used to assess the socioeconomic status and literacy level of all the patients.

Required laboratory and radiological investigations were done and the patients were managed according to the standard protocols.

Results

Of the 153 patients, 127 (83%) were male and 26 (17%) were female. The youngest patient was 22 years and the eldest 70 years (Fig. 1). One hundred and eleven patients (73%) presented with oral cavity and 42 patients (27%) with oropharyngeal carcinomas.

Of the 111 patients presenting with oral cavity cancer, 90 (81%) were male and 21 (19%) were female. The commonest site was found to be buccal mucosa (41%) (Table 2). The most common presenting symptom was a mass/ulcer in the oral cavity, followed by pain, dysphagia and trismus. The most commonly identifiable risk factor was tobacco chewing (Table 3). Fifty-one patients each had a well differentiated and a moderately differentiated malignancy on histopathological evaluation, whereas, nine patients had a poorly differentiated squamous cell carcinoma (Table 4). Forty-four patients had cervical lymphadenopathy on presentation.

Of the 42 patients presenting with oropharyngeal cancer, 37 (88%) were male and 5 (12%) were female. The commonest site was found to be the base of tongue (Table 5). The commonest presenting symptom was dysphagia. The most common identifiable risk factor was smoking (Table 6). Twenty-seven patients had a moderately differentiated squamous cell carcinoma on histopathological evaluation, whereas, 15 patients had a poorly differentiated squamous cell carcinoma (Table 7). Twenty-nine patients had cervical lymphadenopathy on presentation.

Of the 153 patients, 59 patients (39%) presented with early stage disease (i.e. stage I and II) and 94 patients

Table 1 Kuppuswamy's revised classification for socioeconomic status

Education	A. Score
1. Professional degree (or Hons or MA above)	7
2. BA or BSc degree	6
3. Intermediate or (post high school diploma)	5
4. High school certificate	4
5. Middle school certificate	3
6. Primary school certificate	2
7. Illiterate	1
Occupation	B. Score
1. Professional	10
2. Semiprofessional	6
3. Clerical, shopkeeper	5
4. Skilled workers	4
5. Semiskilled worker	3
6. Unemployed	1
Income (rupees)	C. Score
1. Above 6000	12
2. 3000–5999	10
3. 2250–2999	6
4. 1500–2249	4
5. 900–1499	3
6. 300–899	2
7. <300	1
Score (A + B + C): class	
26–29	I Upper Class/I Professional
16–25	II Upper Middle Class/II Managerial
11–15	III Lower Middle Class/III Clerical/Skilled
5–10	IV Upper Lower Class/IV Semiskilled
Below 5	V Lower Class/V Unskilled

(61%) presented with late stage disease (i.e. stage III and IV).

Of the 59 patients presenting with early stage disease, 50 were male and 9 were female with 51 patients presenting with oral cavity cancer and 8 patients with oropharyngeal cancer. Most of the patients with early stage disease presented in the age group of 31–40 years (Fig. 2). The average delay between onset of first symptom and presentation to us was 2 months. Twenty patients (34%) were found to be illiterate. Twenty-eight patients (47%) belonged to low socio-economic status, whereas, 31 patients (53%) belonged to middle or high status. Thirty-two patients (54%) had an access to a PHC and were aware of it. Thirty-seven patients (63%) consulted a qualified practitioner/PHC before being referred to our centre, whereas, 22 patients (37%) consulted unqualified practitioners/alternative medical practitioners or received no treatment before coming to us (Table 8). Most of

Fig. 1 Showing age distribution of patients with oral and oropharyngeal cancer

Table 2 Sites of presentation in the oral cavity

Sub-site	Number of patients
Upper lip	Nil
Lower lip	09
Buccal mucosa	45
Oral tongue	18
Floor of mouth	09
Lower alveolus	12
Upper alveolus/Hard palate	18
Total	111

the patients were aware of the potential harmful effects of smoking, tobacco chewing and alcohol intake. Twenty-five patients (42%) were aware of their probable diagnosis before coming to us and four patients (16%) out of these associated malignancies with a social stigma or considered it to be a communicable disease. Thirty-nine patients (66%) had good oro-dental hygiene practices and 35 patients (59%) were aware of HIV/AIDS.

Of the 94 patients presenting with late stage disease, 77 were male and 17 were female with 60 patients presenting with oral cavity cancer and 34 patients with oropharyngeal cancer. Most of the patients presented in the age group of 31–40 years (Fig. 2). The average delay between onset of

Table 4 Showing histological differentiation of tumours at various sub-sites in the oral cavity

Histological grade of differentiation (no. of patients)			
Sub-site	Well differentiated	Moderately differentiated	Poorly differentiated
Upper lip	Nil	Nil	Nil
Lower lip	05	04	Nil
Buccal mucosa	14	22	09
Oral tongue	10	08	Nil
Floor of mouth	Nil	09	Nil
Lower alveolus	08	04	Nil
Upper alveolus/ Hard palate	14	04	Nil
Total	51	51	09

first symptom and presentation to us was four and a half months. Fifty-three patients (56%) were found to be illiterate. Fifty-eight patients (62%) belonged to low socio-economic status and 36 patients (38%) belonged to middle or high status. Thirty-eight patients (40%) had an access to a PHC and were aware of it. Thirty-seven patients (39%) consulted a qualified practitioner/PHC before being referred to us, whereas, 57 patients (61%) consulted unqualified practitioners/alternative medical practitioners or received no treatment before coming to us (Table 8). Majority of the patients were aware of the harmful effects of smoking, tobacco chewing and alcohol intake. Thirty patients (38%) were aware of their probable diagnosis before coming to us and 20 patients (56%) out of these associated malignancies with a social stigma or considered it to be a communicable disease. Thirty patients (32%) had good oro-dental hygiene practices and 37 patients (39%) were aware of HIV/AIDS.

After statistical evaluation of data using Fisher Exact Test, there was found to be a significant association (P value < 0.05) between literacy, socio-economic status and stage of presentation with low levels of literacy and low socio-economic status associated with late/advanced stage at presentation.

Discussion

Head and neck is one of the commonest sites for squamous cell carcinomas in our country. Amongst HNSCCs, oral

Table 3 Number of patients with various risk factors for different sub-sites in the oral cavity

Sub-site	Upper lip	Lower lip	Buccal mucosa	Oral tongue	Floor of mouth	Lower alveolus	Upper alveolus
Risk factors (no. of Patients)							
Smoking	Nil	Nil	18	07	06	04	15
Tobacco chewing	Nil	11	32	13	02	14	03
Alcohol	Nil	Nil	04	03	05	05	Nil

Table 5 Sites of presentation in the oropharynx

Sub-site	Tonsil	Base of tongue	Soft palate	Posterior pharyngeal wall	Total
Number of patients	15	21	06	Nil	42

Table 6 Number of patients with various risk factors for different sub-sites in the oropharynx

Sub-site	Tonsil	Base of tongue	Soft palate	Posterior pharyngeal wall
Risk factors (no. of Patients)				
Smoking	10	18	05	Nil
Tobacco chewing	05	Nil	03	Nil
Alcohol	06	08	07	Nil

Table 7 Showing histological differentiation of tumours at various sub-sites in the oropharynx

Histological grade of differentiation (no. of patients)			
Sub-site	Well differentiated	Moderately differentiated	Poorly differentiated
Tonsil	Nil	07	08
Base of tongue	Nil	17	04
Soft palate	Nil	03	03
Posterior pharyngeal wall	Nil	Nil	Nil
Total	Nil	27	15

Table 8 Showing various consultations sought by patients with early and late stage disease before presenting to us

	Early stage disease	Late stage disease
Consultation sought		
Qualified practitioner/PHC	37	37
Unqualified practitioner	05	15
Ayurveda/herbs	03	05
Homeopathy	03	03
Spiritual healing	04	12
Massage	01	04
Folk remedies	03	10
Others/no consultation	03	08

Fig. 2 Showing age distribution of patients presenting with early and late stage disease

cavity and oropharyngeal carcinomas predominate [1–3]. India is a high-risk region for oral and oropharyngeal cancer due to a high prevalence of tobacco use, particularly chewing (in both sexes), bidi smoking and alcohol drinking

in male population [5]. Our country accounts for a quarter of the world burden of oral cancer [12]. Apart from alcohol and tobacco, low level of education, gender, dietary habits and poor oro-dental hygiene have also been found to be associated with a high risk of oral and oropharyngeal cancer [7].

Despite improvements in diagnosis and loco-regional treatment, the long-term survival in oral and oro-pharyngeal cancer has not increased significantly over the past four to five decades and is amongst the lowest of the major cancers world wide [13, 14]. The observed 5-year survival rate in an Indian population has been reported to be as low as 30.5% in a recent study [5]. Such low survival rates have been accredited to advanced age and advanced clinical stage at presentation. Clinical stage at presentation is directly linked to the delay in seeking treatment on part of the patients [6]. The various factors associated with treatment delay that have been reported in the past include: gender [15], age of patient, site of tumour [16], ignorance, rural/urban difference, fear of mutilating surgery [17] and psycho-social factors [6].

The present study is aimed at identifying the role of socio-economic factors and the health-seeking behavior of

patients suffering from oral and oropharyngeal cancer in our population in treatment delay. Our study comprised 153 patients, out of which, 83% were male and 17% were female. This gender distribution was similar to a few of the studies in the past [2], whereas, some studies report a much higher incidence of females suffering from these cancers [6, 7].

Of these, 73% of the patients had cancer of the oral cavity with buccal mucosa as the most common site (41%). Although, oral tongue is considered the most common site for carcinoma in the oral cavity according to western literature [18], the rampant use of chewable tobacco can be attributed to the relatively higher incidence of involvement of buccal mucosa in our country [2, 6]. Seventeen percent of the patients in our study had oropharyngeal cancer with the base of tongue as the commonest site (50%). The most commonly reported oropharyngeal site for cancer in western literature is the tonsil. The most commonly identifiable risk factors for both oral as well as oropharyngeal cancer in our study were tobacco chewing, smoking and alcohol intake. The other reported risk factors in the past include low socio-economic status, gender, dietary habits and poor oro-dental hygiene [7].

Thirty-nine percent of the patients presented to us with early stage disease (stage I and II). These results were comparable to a study on Indian population in the past where 32% of the patients presented with a localized cancer [5]. However, another Indian study in the past reported 50% of the patients presenting in early stages [19].

Thirty-four percent of the patients with early-stage disease and 56% of those with late stage disease were found to be illiterate. Forty-seven percent of the patients with early stage disease and 62% of those with late stage disease belonged to low socio-economic strata. There was a statistically significant association of the literacy levels and the socio-economic status of the patients with their stage of presentation to us. The results were similar to a few of the studies in the past [17, 20], whereas, some other studies have found no significant effect of socio-economic status or literacy on treatment delay [6, 16, 21].

Fifty-four percent of the patients presenting with early stage disease had an access to a PHC, whereas, only 40% of the patients with late stage disease had this access. This difference in distribution of PHCs reflects the lack of primary health care facilities available in our country. PHCs form the first referral unit in our health care system and deprivation of primary health care facility, especially to low socio-economic strata of our population may significantly contribute towards their late presentation.

Thirty-seven percent of the patients presenting with early stage disease and 61% of those with late stage disease consulted unqualified local practitioners or practiced alternative medicine or took no consultation at all before

coming to us. The use of alternative medicine and the treatment delay caused by that has been well-documented in the past [9, 22, 23]. In the developed countries, the use of alternative medicine is primarily attributable to the psychological distress over potential, often mutilating treatments [24, 25]. However, in our study the consultation of unqualified local practitioners/alternative medicine could be attributed to the sheer ignorance and lack of primary health care facilities as most of such consultations were sought by the individuals with low literacy levels/who had no access to a PHC/who were unaware of their probable diagnosis.

Thus, we would like to conclude that illiteracy and low socio-economic status are significantly associated with treatment delay in oral as well as oropharyngeal cancer patients in our population. Similarly, unavailability of primary health care services also seems to be contributory towards this delay. These identified predictors of delay may be used in designing an educational intervention program for patients with oral and oropharyngeal cancers, since prevention is better than cure.

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