

Original Article

Reasons for Diagnostic Delay and its association with socioeconomic factors in Advanced Oral Cancer Patients

Anusha Chintala, Sidramesh Muttagi, Chetan Agarwal
KLE VK Institute of Dental Sciences, Belgaum, Karnataka, India.

Abstract:

Background: Oral cancer is the major cause of cancer related death in India due to high exposure to the known risk-factors. In view of majority of patients presenting to cancer centers for treatment in advanced stage this study was planned to determine various causes for delayed diagnosis and relationship of this delay with socio-economic factors. **Materials and Methods:** This study was conducted on 100 stageIII/stageIV oral cancer patients treated between January 1, 2011–August 31, 2012. The study details were collected using a self-designed validated interviewer administered questionnaire. **Results:** More than 50% of the primary care clinicians could not identify the cancerous lesions and gave false guidance to the patients. This is a cause for the delay and is considered as the ‘secondary delay’ and the maximum range of this delay is 240 days. The range for diagnostic and treatment delay was 300 days, and these come under ‘professional delay’. A statistical significant association ($p<0.05$) was found when the Socio-economic status was compared with total time delay from first symptom to treatment. **Conclusion:** Based on the findings of our study we would like to recommend development of preventive programs that focus on raising public awareness of the signs and symptoms of oral cancer that are essential for promoting earlier diagnosis and treatment in India. It is also the responsibility of the health care professionals to ensure that cancerous lesions are detected at the earliest and treated promptly. All together this will lead to earlier presentations faster diagnosis and better treatment outcomes for oral cancer.

Key words: Diagnostic delay; oral cancer; socioeconomic status

Corresponding author: Anusha Chintala, BDS, KLE VK Institute of Dental Sciences, Belgaum, Karnataka, India. E mail: anushachintala2712@yahoo.com

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Introduction

Oral cancer is a significant disease worldwide with up to 400,000 new cases each year and almost 130,000 deaths annually.¹ Notably, 80% of these cases occur in the South East Asian countries. In many of these Asian countries the situation is compounded by the practice of betel quid chewing.² Tobacco use, including smokeless tobacco and excessive alcohol consumption are prominent risk factors in oral cancer, being estimated to account for about 90% of oral cancers.³

As is well known, India has a high incidence of oral cancer, accounting for 86% of the world's oral cancer cases⁴. This gives India the dubious distinction of having the world's largest number of oral cancer patients with an annual age-standardized incidence of 12.5 per 1,00,000.⁵ Although oral cancer is not a common disease in the west it continues to be the major cause of cancer-related death in India⁵ as it ranks number one among men and number three among women in India. Ninety percent of these cases are due to chewing tobacco.⁴ Apart from tobacco, a

lesser known reason for the epidemic proportion of oral cancer in India is also rampant use of areca nut chewing which has been designated as Group 1 human carcinogen with evidence of increased risk of precancerous oral lesions.⁵ Regardless of the risk factors contributing to oral cancer development, the most important factor that alters patient survival is the stage by which the cancer is detected⁶. Because, the largest single variable affecting survival appears to be the cancer's stage at the patient's initial visit.⁷ Oral cancer is easily detected by seeing a lesion in the oral cavity; however 60% of patients with oral cancer have advanced cancer and may have delay in seeking medical advice. The silent nature of oral lesions and delay in diagnosis are believed to be responsible for this high incidence of advanced-stage oral cancer.⁸ This is believed to be due, in part, to delays in diagnosis.⁹ Diagnostic delay denotes the time interval between the first recognition of symptoms and a definitive diagnosis.⁸ Since, not many such studies have been done in Indian scenario where prevalence is high and most of the patients report in advanced stage of cancer, it would be beneficial to know the factors which hinder the patients from early detection and receiving prompt treatment. Thus, research is required to understand the help-seeking and the delay process in oral cancer patients. In view of highest exposure to risk factors of oral cancer and high prevalence of this disease in northern Karnataka this study was conducted to evaluate the reasons for diagnostic delay in patients with advanced oral cancer (Stage III/Stage IV); and to assess if socio-economic status plays a role in delayed diagnosis of oral cancer.

Materials and Methods

This is a cross-sectional, interviewer administered questionnaire study which has been conducted on stage III/stage IV (IVA

/IVB) (as per AJCC 2007)¹⁰ oral cancer patients treated between January 1, 2011-August 31, 2012. Ethical approval for this study has been obtained from the ethical review board of the institution and prior permission was taken from the authorities of the hospitals and cancer centers before the commencement of the study. Patients who met the inclusion criteria were randomly selected and interviewed after a written informed consent from the patient.

Sampling Technique

A convenience sample of 100, stage III/stage IV (IVA /IVB) oral cancer treated patients were selected, from hospitals and cancer centers of northern Karnataka namely Hubli and Belgaum cancer hospitals.

Inclusion Criteria

1. The patients treated for stage III/stage IV (IVA/IVB) oral cancer in Belgaum and Hubli cancer hospitals.
2. Patients treated between January 1, 2011 - August 31, 2012.
3. Patients of age group 18 years and above.

Exclusion Criteria

1. Patients suffering from other malignancies.
2. Patients diagnosed with early stages (stage I/stage II) and recurrence of oral cancer.
3. Patients with lesions discovered as an incidental finding were excluded as they had not made a self-discovery of oral symptoms, and therefore, there were no help-seeking decisions to assess.

Data Collection

All the patients who met the inclusion criteria were called for a meeting. They were briefed about the purpose of the study and instructed regarding interviewer administered questionnaire. The study details had been collected using self-designed validated questionnaire. This procedure has been performed patient wise, in each hospital in respect to the selected hospitals and

cancer centers in Belgaum and Hubli cities of Karnataka state.

Details of Questionnaire

A self designed and validated questionnaire has been used in the present study. The questionnaire had two parts:

First Part: consisted of 13 questions pertaining to the socio-demographic data of the patient. For assessing the socio-economic status, the necessary information regarding education, occupation and family income has been obtained from the questionnaire and subjects were divided accordingly from class I-class V, using modified family income group of the Kuppuswamy's socio-economic status scale.

Second Part: consisted of 22 questions pertaining to the time intervals established as sequential and potential areas for patient delay and diagnostic delay. This part was designed to help us understand the various reasons of delay and contains both open and closed ended questions. The details of which are as follows:

T1: The length of time, in days, from the time at which the patient first became aware of the symptoms to his or her visit to a primary care clinician.

T2: The length of time, in days, from the time when the patient was seen by the primary care clinician to the time when the patient was seen by the specialist.

T3: The length of time, in days, from the time when the patient was first seen by the specialist to the establishment of diagnosis.

T4: The length of time, in days, from the time of diagnosis to the time at which the definitive treatment has begun.

Statistical Analysis

SPSS software version 17 has been used to analyze the data. All the data was expressed in percentage distribution. Mean and range of the time intervals were analyzed and chi square test was used for association of the

variables and Mann Whitney U test was used for comparing morbidity and delay.

Results

A sample of 100 advanced stage oral cancer patients from the cancer hospitals of Belgaum and Hubli cities that met the inclusion criteria and gave consent were interviewed for the present study which was conducted according to a validated questionnaire. The results of the study are described in following parts: the demographic characteristics; socio-economic status using kuppuswamy's socio-economic status scale; and the details of the delay.

Demographic characteristics

Eight-one percent of patients were male and nineteen percent were female. The mean of age of patients with oral cancer that were included in the study was 49.55 with a range of 20 - 87 years. The highest number of patients were Hindu's (84%) followed by Muslims (13%), Christians (2%), others (1%). Ninety-nine percent of patients were married. Only 12% of these patients had a family history of cancer. 24% of the patients had a medical history which may include hypertension, diabetes mellitus and very few cases of asthma, cirrhosis of liver and kidney damage. Out of 100 patients only 18% of the patients reported of having a dental complaint and consulted a dentist in the past two years. In this sample of 100 patients 84% have habits such as chewing tobacco (44%), smoking tobacco (22%), drinking alcohol (3%) and (14%) had more than one habit and 16% had no such habits but still were diseased with oral cancer.

Socio-economic status

As per the Kuppuswamy classification , out of the total 100 patients 52% belong to upper middle and lower middle class, 47% belong to upper lower and lower class and only 1% belonged to the upper class. The socio-economic status and primary delay (T1) was

not found to be associated (Table 1). When the socio-economic status and secondary delay (T2) was compared, a statistically significant association was found (Table 2). When the socio-economic status and diagnostic delay (T3) was compared, no significant association was found (Table 3). When the socio-economic status and treatment delay (T4) was compared, statistically significant association was found (Table 4). A statistical significant association ($p < 0.05$) was found when the Socio-comic status was compared with total time delay from first symptom to treatment (Table 5).

Diagnostic Delay

The findings of diagnostic delay have been summarized in Tables 6-12.

Discussion

The present study was undertaken to determine various reasons for diagnostic delay in patients with advanced oral cancer. Our study stated that, the length of patient delay is unrelated to patient's age, gender, religion. Other studies dealing with the same parameters mentioned earlier were also unable to give a positive correlation.¹¹ Although, the subjects in our study were poorly educated, a study by Llewellyn et al¹² did find education to be important, and stated that low educational status was most consistent factor associated with delay in seeking treatment by the patients with oral cancer. There are various reasons for delay in diagnosis of oral cancer. There are a number of reasons why people do not visit clinicians soon after noticing symptoms. One is the financial barrier, Moreover; patients may have insufficient or incorrect knowledge to appropriately interpret the relevance of their symptoms to malignancy or possibly fail to seek help due to the fear of cancer or lack of faith in medical treatment. This may be called as the "patient delay" or "diagnostic delay".

Professional delay was assessed based on the identification of lesion and referral of the patient. In this study 29% of the primary care clinicians prescribed the patients creams and tablets for their symptoms and 25% told the patients that the symptoms will go away automatically which suggests that more than 50% of the doctors could not identify the cancerous lesions and gave false guidance to the patients. This also is a cause for the delay and is considered as the 'professional delay' , there are other studies which emphasize on this aspect and even say that in such cases patients may generally be disciplined to seek early medical care. In India there are many professionals of alternative medicine who lack the knowledge of malignancy and its symptoms. In this study, the mean time from referral to the specialist was 19.32 days, which is appropriate. The longer delay was 240 days that too because the patient was using an alternative medicinal therapy for the treatment of oral cancer. This specific delay illustrates the need for patients to realize the potential seriousness of the problem and the wisdom of arranging early appointments with the specialist, and take proper guidance regarding the case. There was also significant delay observed from meeting the specialist to getting the treatment of oral cancer with a mean delay of this interval being 29.73 days in this study. This interval also includes the patient undergoing necessary tests and other investigations. The longest range of this delay was 300 days in the present study. In these cases the delay was caused due to various reasons of which the main reasons were the socio-economic factors and awaiting funds from various government schemes for the treatment. There were also few cases that had anxiety about surgery and hence caused the delay. Surprisingly, there were some patients who decided not to get treated as there were no symptoms of pain.

Table 1: Distribution of subjects according to Socio-economic status and Primary delay

	T1-Primary delay			Total	P-value
	<10 days	10-30 days	>30 days		
Upper and middle class	19	17	17	53	0.403
Lower class	17	20	10	47	
Total	36	37	27	100	

Table 2: Distribution of subjects according to Socio-economic status and Secondary delay

	T2-Secondary delay			Total	P-value
	<10 days	10-30 days	>30 days		
Upper and middle class	10	21	22	53	0.05*
Lower class	14	24	9	47	
Total	24	45	31	100	

*Denotes statistical significance

Table 3: Distribution of subjects according to Socio-economic status and Diagnostic delay

	T3- Diagnostic delay		Total	P-value
	<10 days	>30 days		
Upper and middle class	33	20	53	0.85
Lower class	29	18	47	
Total	62	38	100	

Table 4: Distribution of subjects according to Socio-economic status and treatment delay

	T4-Treatment delay			Total	P-value
	<10 days	10-30 days	>30 days		
Upper and middle class	23	15	15	53	0.04*
Lower class	24	15	8	47	
Total	47	30	23	100	

*Denotes statistical significance

Table 5: Association of socio-economic status and total delay using Chi-square test

SES score	Total Delay in months					Total	P-value
	<1	1-3	3-6	6-12	>1yr		
Upper and middle class	2	19	10	14	8	53	0.037*
Lower class	4	26	5	11	1	47	
Total	6	45	15	25	9	100	

*Denotes statistical significance

Table 6: What was the main reason you visited the doctor?

	Frequency	Percent
Persistence of symptoms	2	2.0
Change in symptoms	4	4.0
Presence of another reason for visit	3	3.0
Advice of family member	2	2.0
Increase in symptoms	88	88.0
Desire for early diagnosis	1	1.0
Total	100	100.0

Table 7: Which type of doctor did you first meet?

	Frequency	Percent
Ayurvedic doctor	2	2.0
Homeopathic doctor	1	1.0
Dentist	28	28.0
General physician	62	62.0
Others	7	7.0
Total	100	100.0

Table 8: What did the doctor advice you?

M,b	Frequency	Percent
Prescribed creams and tablets	29	29.0
Advised investigation	20	20.0
Referred you to a specialist	21	21.0
Identified the symptom as a premalignant lesion or cancer	5	5.0
Told that it will go away automatically	25	25.0
Total	100	100.0

Table 9: If treatment was given by first doctor, did it help your condition?

	Frequency	Percent
No, it did not help	27	27.0
No treatment was given and he referred me to specialist	67	67.0
1 st condition reduced but later recurred	6	6.0
Total	100	100.0

Table 10: If there was no change in your condition, then what did you do?

	Frequency	Percent
You consulted a Specialist	21	21.0
1 st Doctor referred you to a specialist	78	78.0
1st doctor advised you to continue the treatment	1	1.0
Total	100	100.0

Table 11: What type of specialist did you consult?

	Frequency	Percent
General surgeon	87	87.0
Dental specialist	13	13.0
Total	100	100.0

Table 12: How was the cancer diagnosed?

	Frequency	Percent
X-ray	2	2.0
Biopsy	25	25.0
Both the above	73	73.0
Total	100	100.0

The statistical findings of our study suggest that there is a considerable association between socio-economic factors and the total delay period in oral cancer patients. Hence, the risk of delay was higher in patients who had a lower socio-economic status. A study conducted by Llewellyn, Johnson and Warnakulasuriya in the hospitals of southeast England also stated the same. Hence the delay caused due to this reason can have significant effect on overall long term survival of the patient.

Conclusion

Based on the findings of the study it can be concluded that,

- 1) Delay in seeking treatment is in terms of patient delay contributes to poor outcomes in oral cancer.
- 2) Lower socio-economic status is an important factor that contributes to the delay.

3) Awareness about the oral cancer among people and general practitioners can lead to its early diagnosis and hence treatment.

4) It is unethical to have a professional delay and hence it should be avoided.

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