

## Original Research Article

# Possible causes for delay in diagnosis and treatment in head and neck cancer: an institutional study

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**Received:** 28 April 2018

**Accepted:** 14 May 2018

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## ABSTRACT

**Background:** Head and neck cancer is one of the leading cancers among Indian population. Early diagnosis and treatment is cornerstone for improving survival in any malignancy, any delay leads to advanced form of disease, leading to higher morbidity and mortality. Given the location, head and neck cancers are easily visible or palpable on clinical examination. In spite of this, many patients are diagnosed at advanced stage.

**Methods:** A cross sectional observational study was conducted at a tertiary care center of western India including 156 newly diagnosed head and neck cancer patients. Delay in seeking medical attention was defined as time interval of more than 3 months from the first symptom recognition to the first medical consultation. Subjects were then divided into delay and non-delay group and compared to identify the factors associated with delay in seeking medical attention.

**Results:** Delay in seeking medical consultation was seen in 109 (69.9%) patients. The factors found significantly associated with delay were older age ( $p < 0.001$ ), rural background ( $p < 0.001$ ), illiteracy ( $p < 0.001$ ), joint family ( $p < 0.001$ ), poor socioeconomic status ( $p < 0.001$ ), longer distance from hospital ( $p < 0.001$ ), tobacco chewing ( $p = 0.018$ ), insufficient knowledge ( $p < 0.001$ ) and fear ( $p = 0.031$ ) of the disease.

**Conclusions:** Many of the identified factors for delay in seeking medical attention in head and neck cancer patients are amenable to improvement. Improving health coverage and awareness of available health services, specially in far rural areas could prevent delay in diagnosis and treatment and thus significantly reduce morbidity and mortality as well as burden on health system.

**Keywords:** Delay, Head and neck cancer, Socio-demographic

## INTRODUCTION

Head and neck cancer is one of the leading cancers among Indian population, with estimated incidence of about 14.3% (23.3% in males and 6.3% in females) and estimated mortality of about 15.4% (22.8% in males and 7.3% in females) for all cancer cases.<sup>1,2</sup> At present study centre, head and neck malignancies constitute approximately 25% of all cancers. Most of the diagnosed head and neck cancers are histologically squamous cell

carcinomas (90-95%). Early diagnosis and treatment is cornerstone for improving survival in any malignancy, any delay leads to advanced form of disease at presentation, leading to higher morbidity and mortality.

Given the location, head and neck cancers are easily noticeable to the patient or palpable on clinical examination. In spite of this, many patients are diagnosed at advanced stage because of delay in seeking attention. Lack of alarming early symptoms may be responsible for lack of impetus to seek medical attention.<sup>3</sup>

Present study was conducted with the objective to determine the prevalence of delay in seeking medical attention among newly diagnosed head and neck cancer patients and to determine the factors associated with this delay.

**METHODS**

A cross sectional observational study was conducted at department of Radiation oncology of a tertiary care centre of western India between June to November 2017.

A total of 156 patients who were newly diagnosed with cancer of head and neck were included in the study. All cases were inquired regarding the onset of presenting symptoms, time lag between first symptom to appear and consultation to health care professional, basic socio-demographic profile, and psychosocial factors suspected to be associated with delay in seeking medical consultation. Delay in seeking medical attention was defined as time interval of more than 3 months from the first symptom recognition to the first medical consultation. Ethical clearance was obtained from the Institute’s ethical committee prior to initiation of study. Written informed consent was obtained from all subjects

(parents in case of children) prior to initiation of study. If patient had communication difficulties due to the disease or other reasons, then information was obtained from his/her attendant or close family member.

**Statistical analysis**

Quantitative data was expressed as mean and standard deviation. Categorical data were expressed as number and percentage and analyzed using the chi square test. Odds ratio with 95% confidence interval was calculated to determine the risk associated with different suspected factors. A p value <0.05 was considered as statistically significant. All statistical analysis was done using Epi info version 7.2.1.0.

**RESULTS**

Delay in seeking medical consultation was seen in 109 (69.9%) of newly diagnosed head and neck cancer patient. The mean age of study subjects was 55.4±21.1 years. Majority of the patients were male (71.79%) and most subjects (71.15%) were older than 50 years. More than three fourth of the subjects were from rural area and more than half (54.48%) subjects were illiterate (Table 1).

**Table 1: Baseline characteristics of patients of head and neck cancer.**

Parameters	Number	Percentage (%)
Age (years)	0-25	3.84
	26-50	25.0
	>50	71.15
Gender	Male	71.79
	Female	28.21
Marital status	Married	84.61
	Unmarried	15.38
Residence	Rural	76.28
	Urban	23.71
Education	Illiterate	54.48
	Primary	21.79
	Middle	14.74
	Graduation	8.97
Type of family	Nuclear	24.35
	Joint	76.64
Occupation	Labour	57.05
	Farmer	33.33
	Service	9.61
Diet	Vegetarian	78.84
	Mix	21.15
Distance from hospital	Accessible	19.23
	Inaccessible	80.76
Co morbidity	Yes	10.89
	No	89.10
Socioeconomic status	Low	71.79
	Middle class	21.79
	Upper class	6.41

Continued.

Parameters	Number	Percentage (%)	
Type of habit	Tobacco chewer	85	54.48
	Tobacco smoker	40	25.64
	Both	21	13.46
Duration of habit	None	10	6.42
	<10 years	23	14.74
	>10 years	123	78.84
Alternative therapy	Yes	98	62.82
	No	58	37.17
Knowledge of disease	Sufficient	28	17.94
	Insufficient	128	82.05
Disclosure of disease	Yes	121	77.56
	No	35	22.43
Motivation	Self	69	44.23
	Others	87	55.76
Fear of disease	Yes	91	58.33
	No	65	41.66

**Table 2: Factors associated with delayed reporting in head and neck cancer.**

Variables	Parameters	Delay (%)	No delay (%)	Odds ratio (%)	P value
Age group	0-25	2 (33.3)	4 (66.7)	1	<0.001
	26-50	18 (46.2)	21 (53.8)	1.71 (0.28-10.48)	
	>50	89 (80.2)	22 (19.8)	8.09 (1.39-47.05)	
Gender	Male	78 (69.6)	34 (30.4)	1	0.925
	Female	31 (70.5)	13 (29.5)	1.04 (0.49-2.23)	
Marital status	Married	96 (72.7)	36 (27.3)	2.26 (0.93-5.49)	0.114
	Unmarried	13 (54.2)	11 (45.8)	1	
Residence	Rural	95 (79.8)	24 (20.2)	6.50 (2.92-14.49)	<0.001
	Urban	14 (37.8)	23 (62.2)	1	
Education level	Illiterate	76 (89.4)	9 (10.6)	30.96 (7.25-132.21)	<0.001
	Primary	20 (58.8)	14 (41.2)	5.24 (1.23-22.28)	
	Middle	10 (43.5)	13 (56.5)	2.82 (0.62-12.89)	
	Graduation	3 (21.4)	11 (78.6)	1	
Type of family	Nuclear	12 (31.6)	26 (68.4)	1	<0.001
	Joint	97 (82.2)	21 (17.8)	10.01 (4.36-22.97)	
Occupation	Labour	70 (78.7)	19 (21.3)	10.13 (2.90-35.42)	0.108
	Farmer	35 (67.3)	17 (32.7)	5.66 (1.57-20.42)	
	Service	4 (26.7)	11 (73.3)	1	
Diet	Vegetarian	35 (53)	31 (47)	1	<0.001
	Mix	74 (82.2)	16 (17.8)	4.10 (1.98-8.46)	
Distance from hospital	Accessible	10 (33.3)	20 (66.7)	1	<0.001
	Inaccessible	99 (78.6)	27 (21.4)	7.33 (3.07-17.51)	
Co-morbidity	Yes	13 (76.5)	4 (23.5)	1.46 (0.45-4.72)	0.728
	No	96 (69.1)	43 (30.9)	1	
Socioeconomic status	Low	89 (79.5)	23 (20.5)	9.03 (2.17-37.66)	<0.001
	Middle	17 (50)	17 (50)	2.33 (0.52-10.57)	
	Upper	3 (30)	7 (70)	1	
Type of habit	Tobacco chewer	66 (77.6)	19 (22.4)	8.11 (1.91-34.40)	0.018
	Tobacco smoker	26 (65)	14 (35)	4.33 (0.97-19.43)	
	Both	14 (66.7)	7 (33.3)	4.67 (0.92-23.79)	
	None	3 (30)	7 (70)	1	
Duration of habit	<10 years	15 (65.2)	8 (34.8)	1	0.383
	>10 years	94 (76.4)	29 (23.6)	1.73 (0.67-4.49)	
Knowledge	Insufficient	103 (80.5)	25 (19.5)	15.11 (5.54-41.18)	<0.001
	Sufficient	6 (21.4)	22 (78.6)	1	

Continued.

Variables	Parameters	Delay (%)	No delay (%)	Odds ratio (%)	P value
<b>Disclosure</b>	Yes	83 (68.6)	38 (31.4)	0.76 (0.32-1.77)	0.662
	No	26 (74.3)	9 (25.7)	1	
<b>Motivation</b>	Self	50 (72.5)	19 (27.5)	1.25 (0.62-2.50)	0.651
	Other	59 (67.8)	28 (32.2)	1	
<b>Fear</b>	Yes	57 (62.6)	34 (37.4)	1	0.031
	No	52 (80)	13 (20)	2.39 (1.14-5.01)	

The factors found significantly associated with delay in seeking medical consultation were older age, rural background, illiteracy, joint family, poor socioeconomic status, longer distance from centre, tobacco chewing, insufficient knowledge and fear of disease (Table 2). Patients age >50 years had highest risk of delay (OR= 8.09, 95% CI- 1.39-47.05). Rural residence was also associated with higher risk (OR=6.50 95% CI- 2.92-14.49). Illiteracy was significantly associated with delay with OR of 30.96 (95% CI=7.25-132.21). Persons living in joint family (OR=10.01 95% CI- 4.36-22.97) and person with lower socio-economic status (OR= 9.03 95% CI- 2.17-37.66) were more likely to have delay in seeking medical consultation.

## DISCUSSION

Two analyses of patient delay in seeking a medical diagnosis have been described by Andersen and Cacioppo, model of delay and social psychological analyses.<sup>4</sup> Delay is comprised of four stages: appraisal, illness, and behavioural and scheduling delay intervals. The eight principles of Psycho-physiological Comparison Theory provide the basis for clarifying the psychological processes of symptom interpretation and appraisal.

There is no validated way of measuring the prevalence and duration of patient delay.<sup>5</sup> Few studies have been carried out to identify possible cause of delay in seeking medical attention by patients in head and neck cancer. Their findings are more or less consistent with the present study. Akram et al have found delay in reporting in 60% of oral and oropharyngeal cancer patients, and found delayed reporting significantly associated with older age group (p=0.001), low socioeconomic status (p=0.02), rural residence (p=0.03), insufficient knowledge of disease (P=0.014), attribution of symptoms as minor (p=0.011), absence of fear (p<0.001) and use of alternate therapy (p=0.001).<sup>6</sup> Gender, marital status, disclosure to other and motivation were statistically insignificant. Agarwal et al have evaluated the role of the role of socio-economic factors and health-seeking behaviour responsible for treatment delay in 153 oral and oropharyngeal cancer, and have concluded literacy, socio-economic status, access to primary health centre, and health-seeking behavior to have significant association with the stage of presentation of patients with oral and oropharyngeal cancer.<sup>7</sup>

Some studies have also focussed on the use of contemporary and alternative medicine (CAM) as a possible cause of delay. Kerdpon et al have found

delayed reporting of more than a month in 42% patients of oral squamous cell carcinoma in southern Thailand.<sup>8</sup> Both patients and health care professionals were responsible for the diagnostic delay. Traditional herbal medication use was the only factor significantly associated with prolonged patient delay. Patterson et al have assessed predictors and costs of various types of alternative medicine used by adult patients with cancer.<sup>9</sup> They have found that 70.2% of patients used at least one type of alternative medicine, with 16.6% seeing alternative providers, 19.1% using mental/other therapy, and 64.6% taking dietary supplements. Use of alternative medicines was found more in females, elders, and higher educated. Ernst and Cassileth retrieved a total of 26 surveys from 13 countries, and have reported the use of CAM therapies in adult populations ranging from 7-64%, with an average prevalence across all adult studies to be 31.4%.<sup>10</sup>

The consequences of delay in seeking medical aid have also been highlighted in a number of studies, with most of them pointing out that such delay results in advanced stage of presentation, which ultimately affects the treatment outcome. Dubayova et al say that high levels of fear are associated with earlier help-seeking in both diseases.<sup>11</sup> Brouha et al have concluded that patients with a delay of more than 30 days were significantly more often diagnosed with late-stage (T3-T4) disease (p=0.01), whereas no socio-demographic characteristics were associated with patient delay.<sup>12</sup> Elango et al have studied the trends of head and neck cancers in urban and rural India by reviewing the cancer registry data over a period of 13 and 11 years, respectively.<sup>13</sup> They concluded that the overall incidence of head and neck cancer is reducing, however that of tongue is increasing. Oral cancers formed the majority of the head and neck cancers with a predilection for tongue, except in rural males, in whom the pharynx was the predominant sub-site. Pharyngeal cancer showed reduction in urban females (p<0.01), whereas it increased in rural females. The recent increase in incidence of young adults with HNSCC reported in developed countries was not observed. Allison et al found that having a pharyngeal cancer (p<0.001), a professional delay >1 month (p=0.02) and age ≥65 years (p=0.02) were predictive of late stage disease among 188 patients of upper aerodigestive tract carcinoma.<sup>14</sup>

## CONCLUSION

Older age, illiteracy, living in rural background in joint family, having longer distance from health facility, poor socioeconomic status, chewing tobacco for more than 10

years, having insufficient knowledge of disease and fear of the disease were significantly associated with delay in seeking medical attention in head and neck cancer patients. Such delay results in advanced stage of presentation, ultimately affecting the treatment outcome. Improving health coverage, specially in far prong rural areas and improving awareness among people about such diseases and availability of health services in their vicinity may help in early diagnosis and treatment and reduce disease associated morbidity and mortality and thus burden on our health system.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Agarwal N, Singh D, Verma M, Sharma S, Spartacus RK, Chaturvedi M. Possible causes for delay in diagnosis and treatment in head and neck cancer: an institutional study. *Int J Community Med Public Health* 2018;5:2291-5.