

## RESEARCH ARTICLE

# A Pilot Study on Factors Associated with Presentation Delay in Patients Affected with Head and Neck Cancers

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## Abstract

**Background:** Patient delay can contribute to a poor outcome in the management of head and neck cancers (HNC). The main objective of the present study was to investigate the factors associated with patient delay in our population. **Materials and Methods:** Patients with cancers of the head and neck attending a regional cancer center of North East India were consecutively interviewed during the period from June 2014 to November 2014. The participation of patients was voluntary. The questionnaire included information on age, gender, residential status, educational qualification, monthly family income, any family history of cancer, and history of prior awareness on cancer from television (TV) program and awareness program. **Results:** Of 311 (n) patients, with an age range of 14-88 years (mean 55.4 years), 81.7% were males and 18.3% females (M:F=4.4). The overall median delay was 90 days (range=7 days-365 days), in illiterate patients the median delay was 90 days and 60 days in literate patients (P=0.002), the median delay in patients who had watched cancer awareness program on TV was 60 days and in patients who were unaware about cancer information from TV program had a median delay of 90 days (p=0.00021) and delay of <10 weeks was seen in 139 (44.6%) patients, a delay of 10-20 weeks in 98 (31.5%) patients, and a delay of 20-30 weeks in 63 (20.2%) patients. **Conclusions:** Education and awareness had a significant impact in reduction of median patient delay in our HNC cases.

**Keywords:** Delay - head and neck cancer - health education - median - patient delay

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## Introduction

Head and neck cancers (HNC) are the cancer that arises from the mucosal lining of the head and neck region. The HNC are the cancers of the lip, oral cavity, tongue, tonsil, oropharynx, hypopharynx, nasopharynx, nose and para nasal sinus, larynx and major salivary glands. HNC constitutes around 20-30% of all cancers of our population (National Cancer Registry Programme, 2013). The prognosis of patients with HNC diagnosed early is good. The patient delay is the period from onset of symptoms due to the disease to seeking first medical attention or advice. It has been shown that there was no association with patient related diagnostic delay and stage of the disease, which was attributed to the lack of sensitivity of disease stage to delay related disease progression, and variation in tumor aggressiveness (Goy et al., 2009). At times due to the inherent aggressive biological behavior like that of tongue cancers (Salem, 2010), patient might report with an advanced stage at presentation. It has also been shown that 58% of patients with oral cancer are responsible for the delay in the diagnosis of their cancers (Morelato et al., 2007). There is a wide disparity in the early diagnosis of cancers amongst the rural population of low-middle income countries, which are mostly due

to lack of awareness, socio-economic inequalities, poor education levels, and difficulty to access the facilities for cancer diagnosis. Moreover, there is a still dearth of primary care physician in every nook and corner of rural India. Furthermore, the main reason for delay in seeking treatment for oral cancers is due to patient delay (Joshi et al., 2014). Additionally there are secondary and tertiary delays which are also termed as professional delay (Yu et al., 2008; Dwivedi et al., 2012). In this pilot study authors have tried to investigate possible factors associated with the patient delay of HNC in our population.

## Materials and Methods

This study was approved by the institutional ethics committee of the institute where it was undertaken. Patients with cancers of the head and neck attending a regional cancer center of North East India were consecutively interviewed at the time of patient registration from June 2014 to November 2014. The cases for the present study included cases diagnosed by clinical, radiological and/or histologically confirmed patients. All the patients were interviewed by trained medical social workers. The participation of patients was voluntary. The patient delay was recorded in days as informed by the patients

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themselves about the onset of their symptoms to seeking medical attention. The questionnaire included information on age, gender, residential status, educational qualification, monthly family income, any family history of cancer, and history of prior awareness on cancer from television (TV) program and awareness program. Information on HNC sub-sites, and co-morbidity like hypertension, diabetes mellitus, Koch's etc was obtained from the hospital case sheets. Residential status was recorded as either urban or rural. Educational qualification of the patients was broadly divided as illiterates (unable to read or write) and literates (able to read and write, school /college/higher education). Monthly family income was noted as provided by the patient. Family history of cancer was recorded as following; no known history, and family history of HNC or other cancers. Head and neck cancer sites were coded and classified according to the ICD-10 (International statistical classification of disease, 10th revision) manual. The codes were from C00-14 and C-32. Patients excluded from the present study were patients with poor general condition or debilitating conditions and those who were not willing to participate in the study.

*Sample size estimation*

Assuming a precision of 5% and the prevalence of HNC at our institute, the estimated sample size was N=297.

*Statistical analysis*

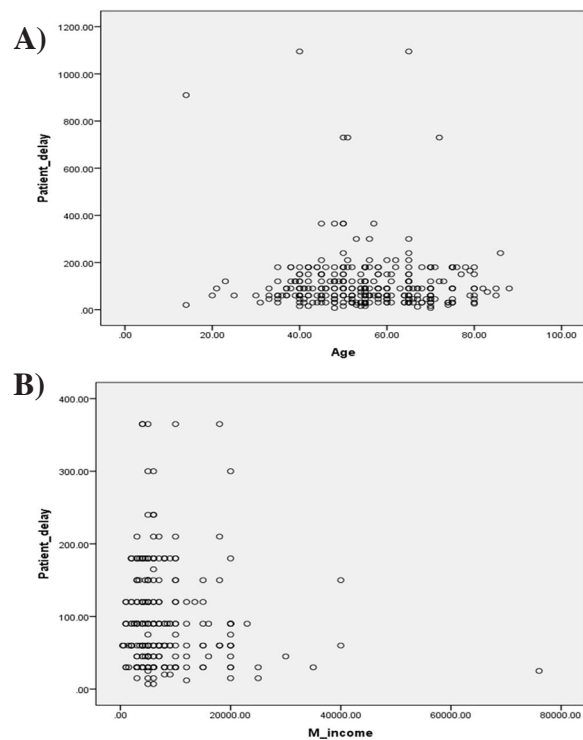
Descriptive statistics of mean and median was calculated. The median delay was calculated in days. The patient delay was estimated as median and for comparing the variables non-parametric Mann-Whitney U test was done to determine whether there were significant differences between lengths of delay. P<0.05 was considered as statistically significant.

**Results**

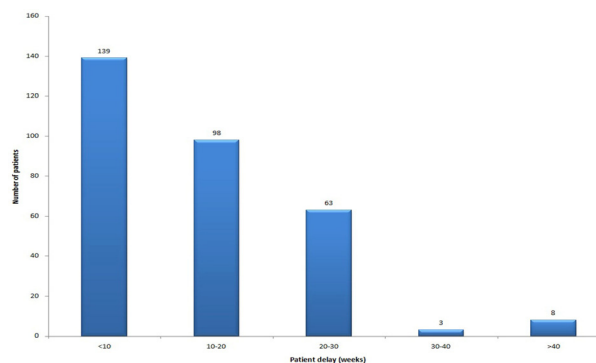
A total of 311 (n) patients were interviewed and these patient's case sheets were recruited for the present study. The age of patients ranged from 14-88 years with a mean age of 55.4 years. The correlation co-efficient of age with patient delay showed  $r = -0.063$ ,  $p=0.265$  (Figure 1A). Of 311 patients, 254 (81.7%) were males and 57 (18.3%) were females (M:F=4.4). The characteristics of median delay and numbers in each category of 311 (n) patients are shown in Table 1. The overall median delay was 90 days (range was 7 days-365 days). The median delay in males and females was 90 days ( $p=0.281$ ). The median delay in rural and urban residences was 90 days and 60 days respectively ( $p=0.197$ ). In illiterate patients the median delay was 90 days and 60 days in literate patients ( $p=0.002$ ). Presence of co-morbid condition was seen in 59 (18.9%) patients. There was median delay of 90 days ( $p=0.713$ ) in either absence or presence of co-morbidity. Of all patients, only 4(1.2%) had ever attended prior cancer awareness programs. Seventy one (22.8%) of patients in the present study had come to know about cancer from a TV program. The median delay in these patients was 60 days and in patients (77.2%) who were unaware about

**Table 1. The table Shows the Characteristics of 311 (n) Patients who Participated in the Study**

Variables	Numbers (%)	Median delay (days)	p-value
Gender			
Male	254 (81.7)	90	0.281
Female	57 (18.3)	90	
Residential Status			
Rural	265 (85.21)	90	0.197
Urban	46 (14.79)	60	
Education			
Illiterate	156 (50.16)	90	0.002*
Literate	155 (49.84)	60	
Co-morbid condition			
Yes	59 (18.97)	90	0.713
No	252 (81.03)	90	
Awareness from TV program			
Yes	71 (22.8%)	60	0.00021*
No	240 (77.2%)	90	



**Figure 1. A Scatter Plot for Delays with Respect to Patient's Age; B Scatter Plot for Delays with Respect to Monthly Family Income**



**Figure 2. The Bar Graph Showing the Distribution of Delays in Weeks**

**Table 2. It Shows the Presence or Absence of Known Family History Cancer in Patients with Head & Neck Cancers and its Relation To Delays**

Family history of cancer	Delay (In weeks)					Total
	<10 # (%)	Oct-20 # (%)	20-30 # (%)	30-40 # (%)	>40 # (%)	
Not Reported	122 (44.9)	81 (29.8)	59 (21.7)	3 (1.1)	7 (2.6)	272 (87.5)
Head & Neck Cancer	12 (48.0)	10 (40.0)	3 (12.0)	0 (0.0)	0 (0.0)	25 (8.0)
Other Cancer	5 (35.7)	7 (50.0)	1 (7.1)	0 (0.0)	1 (7.1)	14 (4.5)

#Numbers, %percentages

**Table 3. It Shows the Median Delay in Relation yo Different Anatomical Locations**

Sites	Frequencies (%)	Median Delay (Days)
Lip, C00	10 (3.2)	90
Tongue, C01-02	57 (18.3)	90
Mouth, C03-06	74 (23.8)	60
Major salivary glands C07-08	5 (1.6)	180
Tonsil, C09	33 (10.6)	118
Oropharynx, C10	14 (4.5)	90
Nasopharynx, C11	5 (1.6)	90
Hypopharynx, C12-14	97 (31.2)	90
Larynx, C32	16 (5.1)	90

cancer from TV program had a median delay of 90 days ( $p=0.00021$ ). The correlation co-efficient of family income with patient delay showed  $r=-0.091$ ,  $p=0.122$  (Figure 1B).

The patient delay was further categorized into 5 groups and the delay was calculated in weeks. The groups were less than 10 weeks, 10-20 weeks, 20-30 weeks, 30-40 weeks and more than 40 weeks. A delay of <10 weeks was seen in 139 (44.6%), 10-20 weeks in 98 (31.5%) and a delay of 20-30 weeks was seen 63 (20.2%) of patients (Figure 2). There were 272(87.5%) patients who had no family history of cancer, 25 (8.0%) patients had a family history of HNC, and in 14(4.5%) patients had family history of cancer other than head and neck sites (Table 2). 12 (48%) patients with a family history of cancer reported within 10 weeks. Five (35.7%) patients with a family history of other cancers reported within 10 weeks and 122 (44%) patients who had no family history of cancer reported within 10 weeks.

Ninety seven (31.1%) patients with head and neck cancers had hypopharyngeal cancer (C12-14), 74 (23.7%) patients had oral cancers (C-03-06), 57 (18.3%) patients had tongue cancers (C01-02), and 33 (10.6%) patients had cancer of the tonsil (C-09). Highest median delay of 180 days was seen in patients with salivary gland (C-07-08) cancers, followed by 118 days in cancer of the tonsil and least median delay (60 days) was observed in patients with oral cancers as shown in Table 3.

## Discussion

The interval between the onsets of symptoms of cancer to the start of effective cancer directed treatment is vital factor in the outcome of treatment for HNC (Jensen et al., 2007). The median patient delay has been reported to be around 3-5 weeks in developed nations and around 7 weeks in low-middle resource countries like Iran (Baughan et al., 2009; Hansen et al., 2011; Esmaelbeigi

et al., 2014). In our present analysis, the overall median patient delay for HNC was over 12 weeks (90 days). This patient delay is significantly higher in comparison. A worldwide systematic review has shown that patient delay mostly contributes to delay in treatment of HNC with an average of 3-4 months (12-16 weeks) of patient delay (Stefanuto et al., 2014). In India, a recent study has shown that women were not aware of the fact that they can also suffer from oral cancer if they use tobacco (chewing or mishri) and gutkha (Tripathi et al., 2014). This finding could a bias for female towards seeking medical attention for cancer. However, our pilot study has shown that there was no difference in the median patient delay based on gender. It has been shown that psychological factors affect health care seeking behavior of patient with HNC (Tromp et al., 2004). From our analysis there was no significant correlation of aging with the median patient delay ( $p>0.05$ ). This finding probably highlights that age may not affect the health care seeking behavior of elderly patients in our population. However, it will require further investigation for its validation.

In this pilot study, there was no significant disparity in the median patient delay due to urban or rural residential status ( $p>0.05$ ). Though, there was a reduction in median patient delay for urban patients (60 days) versus rural patients (90 days) with HNC. In cancer screening programs for patients with disabilities, there is a need for strategies to improve screening among people with disabilities in rural areas (Horner-Johnson et al., 2014). So, it must be borne in mind before interpreting the results from this study, as it has not taken into account patients with disabilities or with poor general conditions from rural or urban areas. It has been previously shown that higher educational levels have a positive influence for the start of treatment in patients with HNC (Krishnatreya et al., 2014). Our present survey has shown that literacy is significantly associated with reduction in the median patient delay in HNC. This was similar to the one already published (Esmaelbeigi et al., 2014). This assumes significance as low literacy rates may lead to disparities in survival due to HNC in our population because of both patient delays. One of the interesting finding from the present pilot study was that, there was no significant association ( $p>0.05$ ) of patient delay with or without the presence of co-morbid conditions like hypertension, diabetes mellitus, Koch's etc. However, cautious interpretation will be required of this finding. Patients with co-morbid conditions may have sought medical attention for their conditions before the symptoms of cancer started and thereby, not influencing the behavior of seeking medical attention for the current illness or HNC cancer in this context.

One of the major finding was that a mere 1.2% of patients with HNC in our population had attended cancer awareness programs and the median patient delay in patients who had prior awareness on cancers by watching TV was significantly lowered ( $p=0.0002$ , 60 days versus 90 days). So, use of mass media campaign as a tool of awareness is to be advocated in low-middle income countries. Such mass media campaign on awareness by using questionnaires for promoting awareness of oral cancer had been done with positive outcome (Saleh et al., 2012). Another fact that needs to be stressed upon is that only 12% of patients had watched cancer awareness program on TV in spite of the surge and wide usage of TV in the country. This calls for more air time of cancer awareness program in India with active participation of media houses. A major challenge for the management of head and neck cancers is the lower socio-economic class of the majority of the population in developing countries (Joshi et al., 2014). Also, socio-economic characteristics of patients predicts patient delay in develop countries (Hansen et al., 2008). From the present pilot study there was no significant correlation ( $p>0.05$ ) with family income with the patient delay. So, it appears that socio-economic condition of patients is not a hindrance for patient related delays in HNC in our population.

In our present analysis, almost 45% of patients had a patient delay of less than 10 weeks. Still a concern remains is that 21% of patients had patient delay of 20-30 weeks which is a significant delay considering tumor progression and upstaging. The presence of family history of HNC showed that none of the patients reported after 30 weeks from the onset of symptoms to seek medical attention. Of HNC, oropharyngeal cancers are most likely to be affected by patient delay as shown in a large cohort of patients (Keeble et al., 2014). In our study of patients with HNC, salivary gland cancers and malignancy of the tonsils were affected by median patient delay.

In India, affordability of care, provision of adequate health personnel and socio-cultural barriers to cancer control are the main challenges for cancer control (Goss et al., 2014). Moreover, a reduction of patient and professional delays due to various reasons will pose a challenge to health planners.

The limitation of this study is the recall biases, especially the precise duration of the patient delay. Moreover, this is not a qualitative study which aims at investigating the reasons for patient delay and is only looking at possible factors associated for the patient delay. In conclusion, education and awareness had a significant impact in reduction of the median patient delay in HNC in our population.

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