RESEARCH ARTICLE

Educational Levels and Delays in Start of Treatment for Head and Neck Cancers in North-East India

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Abstract

Background: There are various patient and professional factors responsible for the delay in start of treatment (SOT) for head and neck cancers (HNC). Materials and Methods: This retrospective study was conducted on data for HNC patients registered at the hospital cancer registry in North-East India. All cases diagnosed during the period of January 2010 to December 2012 were considered for the present analysis. Educational levels of all patients were clustered into 3 groups; illiterates (unable to read or write), qualified (school or high school level education), and highly qualified (college and above). Results: In the present analysis 1066 (34.6%) patients were illiterates, 1,869 (60.6%) patients were literates and 145 (4.7%) of all patients with HNC were highly qualified. The stage at diagnosis were stage I, seen in 62 (34.6%), stage II in 393 (12.8%), stage III in 1,371 (44.5%) and stage IV in 1,254 (40.7%) . The median time (MT) to the SOT from date of attending cancer hospital (DOACH) was, in illiterate group MT was 18 days, whereas in the qualified group of patients it was 15 days and in the highly qualified group was 10 days. Analysis of variance showed there was a significant difference on the mean time for the delay in SOT from DOACH for different educational levels (F=9.923, p=0.000). Conclusions: Educational level is a patient related factor in the delays for the SOT in HNCs in our population.

Keywords: Educational levels - head and neck cancers - treatment delays - patient factors - North-East India

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Introduction

Head and neck cancers constitute around 30% of all cancers in our population. The HNC are the cancers of the lip, oral cavity, tongue, tonsil, oropharynx, hypopharynx, nasopharynx, nose and para nasal sinus (PNS), larynx, parotids and the thyroid. HNCs are more often seen amongst the poorer sections of our population wherein the literacy levels are low. The true burden of HNC in our population may be higher than what it appears in the literature (Mishra and Meherotra, 2014). The literacy rates in our population are 78.8% and 67.2% in males and females respectively (Census of India, 2011). The main reason for primary delay in seeking treatment for oral cancers in Indian population was due to patients themselves (Joshi et al., 2014). Delays have been outlined by Dwivedi et al. (2012). Primary delay is defined as the time from the onset of symptoms to first contact with medical persons, secondary delay is defined as the time from contacting the first medical per- son to a confirmed diagnosis and tertiary delay is defined as the time from a confirmed diagnosis to the start of treatment. The main modalities of treatment for HNCs are surgery and radiotherapy (RT) alone or in combination. Chemotherapy (CT) alone usually plays an adjunct role in the treatment of HNCs and it is not the curative modality of treatment for cancers of the oral cavity, oropharynx, hypopharynx and larynx with a role for chemoradiotherapy in primary management of HNCs (Lasrado et al., 2014). The prognosis of HNC treated early is good and a significant proportion of patients with HNCs in our population present with good a performance status (Krishnatreya et al., 2014). Also, patients with HNC usually presents with innocuous symptoms and signs in comparison with other cancers. So, treatment with surgery and/or radiotherapy can be accomplished relatively easier and any possible delays in the start of treatment (SOT) should be avoided as much as possible. Other than delays in the SOT due to resource constraints, there are delays due to patient factors as well. In this retrospective study, we have tried to see the influence of educational levels on the delay in the SOT from the date of attending cancer hospital (DOACH) in

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patients with HNC.

Materials and Methods

This retrospective study was done on the data of HNC patients registered at a hospital based cancer registry in North-East India. The cases of HNCs diagnosed during the period of January 2010 to December 2012 were considered for the present analysis. HNCs were identified by International Statistical Classification for Diseases, 10th revision (ICD-10) coding on the data set. The ICD-10 coding for HNC sites included in this study are C00-32 and C73. Patients who had received prior cancer directed treatment before attending our hospital were excluded from the present analysis.

Educational levels of patients

Broadly the classifications of education according to the National Cancer Registry Programme of India are; not applicable (for children below 5 years), illiterates (patients who are unable to read or write), literates (patients who are able to read and write their names), school or high school levels (primary, middle, secondary and technical education), technical education, and college and above. Educational levels of all patients were clustered into 3 groups for the present study; illiterates (unable to read or write), qualified (school or high school level education), and highly qualified (college and above).

Stage at diagnosis

The staging of HNC was according to the American Joint Committee on Cancer Classification (AJCC) (Edge et al., 2010).

Statistical analysis

The results of educational levels in patients with HNC are presented as percentages upto single decimal place and analysis of variance (ANOVA) was done to see whether there was any difference on the mean time for the delay in treatment start from DOACH for different educational levels.

Primary objective was to see the different levels of education and stage at diagnosis in patients with HNC. Secondary objective was to estimate the median time (MT) in days from the DOACH to the start of treatment (SOT) with radiotherapy (RT) or/and surgery.

Results

A total of 3080 patients with HNC were included for the present analysis. Of that, 78.8% (2430/3080) were males and 21.1% (650/3080) were females. The overall median age was 56 years. The median age was 57 years and 55 years in males and females respectively. The different educational level of the patients seen in the present analysis were, 1066 (34.6%) patients were illiterates, 1869 (60.6%) patients were qualified and only 145 (4.7%) of all patients with HNC were highly qualified as shown in Table 1. The stage at diagnosis were; stage I was seen in 62(34.6%), stage II in 393(12.8%), stage III in 1371(44.5%) and stage IV in 1254 (40.7%) of

Table 1. It shows the Baseline Characteristics of Patients with HNC's in the Study

Variables	Frequencies	Percentages
Gender		
Male	2430	78.9
Female	650	21.1
Median Age (In Years)		
Over All	56	-
Male	57	-
Female	55	-
Educational level		
Illiterate	1066	34.6
Qualified	1869	60.7
Highly Qualified	145	4.7
Stage at diagnosis		
Stage I	62	2.0
Stage II	393	12.8
Stage III	1371	44.5
Stage IV	1254	40.7

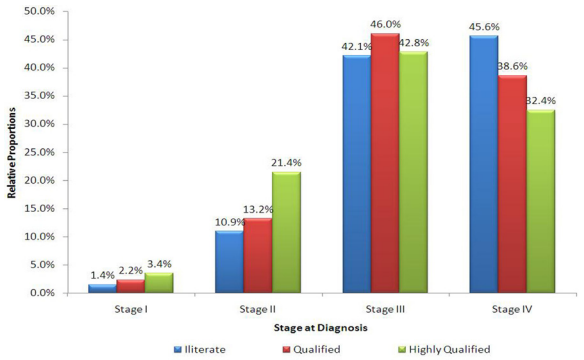

Figure 1. It shows the Proportion of stages at Diagnosis in Patients with Different Educational Levels

patients with HNCs (Table 1). On stage at diagnosis and educational level correlation, it showed 3.4%, 2.2% and 1.4% of highly qualified, qualified and illiterate patients respectively were diagnosed at stage I and similarly, 32.4%, 38.6% and 45.6% of highly qualified, qualified and illiterate patients respectively were diagnosed at stage IV as shown in Figure 1. The MT to the start of treatment from DOACH was 15 days across all educational groups. In illiterate group MT was 18 days, in qualified patients it was 15 days and in the highly qualified group of patient MT was 10 days from the DOACH. ANOVA showed there was a significant difference on the mean time for the delay in treatment start from DOACH for different educational levels (F=9.923, p=0.000). The median time for SOT of primary RT was 14 days and 24.5 days for SOT with primary surgery.

Discussion

In this study majority of patients were males with M:F=3.7. In our population, males were more than 3 times affected with HNCs. In this retrospective study almost 35% of patients were illiterates. This type of finding was also seen in a country from Africa, where most of the patients with HNC had little or no education (Onyango et al., 2006). Furthermore, in our study 85.2% of patients were diagnosed in stage III or stage IV disease. One of the

important prognostic factors in HNC is the stage at disease. Our study has shown that, in addition to multiple patient or professional factors for delay in the SOT, a vast majority of patients presents with an inherent poor prognosis due to the advanced stage at diagnosis. Moreover, our study has shown an inverse relationship for stage I and stage IV at diagnosis depending upon the higher educational qualification of patients. Stage I was seen in relatively more number of patients with improvement of educational levels and stage IV was seen in relatively lesser number of patients with improvement of educational levels.

Disparities in the outcome for HNC treatment could be due to tumor stage, socioeconomic status, and treatment compliance. Literacy rates can be used as a surrogate to assess the socio-economic condition of our population. Patel et al., (2012) have shown that the median lag of time form the date of first diagnosis to SOT was 48 days and it was prolonged for patients receiving primary radiotherapy compared to surgical therapy. However, in our analysis the MT for SOT for primary surgery was prolonged compared to primary RT. This assumes significance for improving resources for surgical facilities in our population. A study has shown the median delay in the treatment in laryngeal cancers to be 49 days (Amar et al., 2010). In this study, there was a reduction in the median time from DOACH to SOT from 18 days to 10 days with improvement in the educational qualification. Our analysis did not considered the date of first diagnosis as the baseline date, as it could be a bias for patients with HNC who presents with varying degrees of symptoms. Patients with lesser degree of symptoms may be diagnosed early but, may report to a cancer center lately in comparison with patients with severe symptoms. So, when considering the DOACH as the baseline date, the bias due to symptoms was reduced. However, a study on limited participants with head and neck cancers has shown that once the patients sought care, most received definitive treatment within a reasonable timeframe (Carroll et al., 2009). The null hypothesis was that, there was no difference amongst the mean time for the delay in treatment start from DOACH for different educational levels. This analysis has rejected the null hypothesis ($p<0.05$). A delay in SOT with RT affects the outcome in patients with HNC (Huang et al., 2003). In our study we have included patients only treated by RT and/or surgery to observe the delays in SOT. However, our study has not focused on the prognosis related to the treatment delays. Cohort studies have shown that, the knowledge about cancer issues is strongly linked to the patient delay in oral cancer and thereby advocated educational interventions (Panzarella et al., 2014). Prolongation of MT for the SOT will be a contributing factor for tumor upstaging and poor response to treatment. So, it is imperative for any rational program of cancer control in this part of the country to include improvement of educational levels of population for better control of HNCs. A recent study from Denmark has shown a significant reduction in delay of diagnosis and treatment of HNC when compared with last decade (Lyhne et al., 2013). Similar studies should be undertaken in our population in the future, and identify whether there is a reduction of delays in the SOT for HNCs. This will highlight efficacies of current health plans and resource allocation for cancer.

In conclusion, in our population a sizeable proportion of patients with HNC were illiterates. Our study has shown that, there was a reduction in the median time for the SOT with improvement of educational levels and presence of significant association of mean delay in the SOT with different educational levels with a bias towards the illiterate group. Educational level is a part of patient related factor in the delays for the SOT in HNCs in our population.

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