

## Prospective Study

### Influence of Socio-economic Factors on the Late Presentation of Head and Neck Cancers

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#### Abstract

**Introduction:** A significant issue that confronts the head and neck surgeons is that many of these cancers present in late stage in contrast to western world. This could be due to inequality in the standards of living.

**Materials and methods:** 62 patients were divided into 2 groups: early and late stage, compared on various socio-economic grounds.

**Results:** Both the groups were made to fill a standard Performa and various socio-economic factors like income, education, occupation etc., were compared. Along with, other influencing factors like previous medical consultations, alternate medicine and distance of the nearby tertiary centre were also taken account and found to be significant.

**Conclusion:** Economic status has a significant influence on the time of presentation.

**Keywords:** Head and neck cancers; Socio-economic factors

#### Introduction

Head and neck cancers are some of the most common cancers in the Indian subcontinent. A significant issue that confronts the otolaryngologists is many of these cancers present in the late stage. This is in contrast to western countries where head and neck cancers present in early stages. A major factor responsible for the difference in presentation could be due to inequalities in the standard of living in developed and developing countries.

Standard of Living (SOL) [1,2] in a country depends upon:

1. Level of national income
2. The total amount of goods and services a country is able to produce
3. Size of population

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4. Level of education
5. General price level
6. Distribution of national income

Staging of cancer depends on the size of primary lesion, its extent of spread to regional lymph nodes and the presence or absence of blood borne metastasis. A stage also refers to a point in time in an essentially dynamic situation where the tumor and patient are changing in relation to each other.

Knowledge of extent of tumor affects the choice of treatment and that "small" or early cancers do better than more advanced ones. The morphological extent of cancer does not tell the whole story and it may be better to integrate tumor and host related factors with anatomical extent to produce prognostic indices with which to make treatment decisions and compare outcomes. Most of these cancers when staged as III or IV do not have a 5yr survival exceeding 40% worldwide.

Many factors in India could influence the late presentation of head and neck cancers for treatment. In traditional societies gender could influence the time of consultation with a doctor.

Illiteracy and standard of living [1,2] are obvious factors which could exert their influence as these could be governed by per capita income of the family.

Education and socio-economic status may affect an individual's knowledge of the health care system, access to services and potential level of involvement in care. As a result those who are more educated may have more positive outcomes because of more active involvement in treatment decisions. Additionally, level of social support among better educated and more economically stable individuals may play a role in the rehabilitation process.

India is a country with multiple systems of alternate medicine and many head and neck cancers seek their help fearing the mutilating effects of surgery and radiation.

Another interesting facet that has to be researched is the number of doctors the patient has seen before being diagnosed as having cancer. This could also throw some light on the quality of medical education in our country.

#### Aims and Objectives

1. To study the influence of gender, literacy, occupation, per capita income, religion and caste on presentation of head and neck malignancy.
2. To study the role of alternate medicine, avg. no. of medical consultation and avg. distance from a tertiary centre.
3. To compare all the variables between 2 groups: ( I + II stage v/s III + IV stage )

#### Materials and Methods

In total of 62 patients were enrolled in the study.

All the patients were first confirmed histopathologically and then were later staged on the basis of standard TNM staging system of head and neck malignancy [3].

Patients were divided into 2 groups

- A. I<sup>st</sup> and II<sup>nd</sup> stage (Early stage)
- B. III<sup>rd</sup> and IV<sup>th</sup> stage (Late stage)

We performed a logistic regression analysis for variables of socioeconomic status (marital status, family income, highest level of education achieved) and potential confounding variables (age, gender, religion smoking status and alcohol consumption).

So, a detailed performa including fore-mentioned variables along with other factors such as number of consultations before achieving definitive diagnosis, treatment of alternate medicine and distance of tertiary centre from home was filled at the first visit of the patient to our tertiary hospital.

The effects of these socioeconomic variables on head and neck cancer were compared with their effects on cancers overall. We compared these variables between the respective 2 groups and tabulated the data using “chi square” method. A ‘p’ value of <0.05 was consider significant.

## Observation and Results

Out of the total 62 patients interviewed, 66% patients were reported in the IV<sup>th</sup> stage, 20% in the III<sup>rd</sup> stage, 9% in the II<sup>nd</sup> stage and 5% in the I<sup>st</sup> stage.

Now, for the convenience, all the respective variables influencing the presentation of head and neck cancer are being compared under 2 categories:

- 1. I<sup>st</sup> and II<sup>nd</sup> stage (early stage) N= 9
- 2. III<sup>rd</sup> and IV<sup>th</sup> stage (late stage) N=53

Data so obtained was analysed and gave the following results.

**A. Sex:** Out of 62 patients, 49 (78%) were males and 13 (22%) were females. Hence a significant incidence of cancer was detected in males then females.

**B. Religion:** 83% majorities belong to Hindu religion and the rest 17% were present in Muslims and Christians. This may be due to predominance of Hindu population in that region.

**C. Age:** Majority of patients of early stage (66%) belong to 41- 60 age group while 70% of late stage patients belong to 51- 70 age group.

**D. Income:** (rupees/ month)

	Early Stage (N=9)	Late Stage (N=53)
< 30,000	1	37
> 30,000	8	16

88% patients of early stage belong to high income group while 70% of late stage belongs to low income group. Significant co-relation was seen regarding the income (p=0.003)

**E. Education:**

	Early Stage (N=9)	Late Stage (N=53)
10 <sup>th</sup> std - Graduation	6	16
0-10 <sup>th</sup> std	8	16

66.7% patients of early stage have an education status of above metric (10<sup>th</sup> std.) while similar percentage (69.8%) of patients in late stage are uneducated or are school dropouts. This co-relation was found to be significant (p=0.034)

**F. Occupation:**

	Early Stage (N=9)	Late Stage (N=53)
Skilled	4(44%)	19(36%)
Unskilled	4(44%)	29(55%)
Unemployed	1(12%)	5(9%)

Majority of patients of late stage were unskilled (55%) but in early stages both skilled and unskilled share the same percentage (44%).

**G. Education of children:**

	Early Stage (N=9)	Late Stage (N=53)
Educated upto 10 <sup>th</sup>	6	32
Grad and post grad	3	17
Uneducated	0	1

Out of 62, 59 patients have children. 32 (54%) of late stage patients have their children educated below or upto 10<sup>th</sup> while 17 (29%) have educated their children upto graduation or even post graduation. Similar sort of trend has been observed in early stage patients with 6 (10%) educated upto 10<sup>th</sup> and 3 (5%) are graduates and post-graduates.

**H. Previous medical consultations:**

	Early Stage (N=9)	Late Stage (N=53)
0	2	10
1	7	33
2 or more	0	10

Out of 53 patients of late stage, 33 (62%) of them have gone for 1 previous medical consultations before being diagnosed as cancer. Similar results have been found with early stage patients with 77% of patients having 1 previous medical consultation. Diagnosis in majority was made by the specialists/ post-graduates.

**I. Alternate medicine:**

	Early Stage (N=9)	Late Stage (N=53)
Ayurvedic	1	13
Homeopathic	1	1

Out of total, 16 (26%) of patients have opted for some sort of alternate medicine predominately ayurvedic 13 (82%) and subsequently have presented in late stages.

**J. Distance of nearby tertiary hospital:**

	Early Stage (N=9)	Late Stage (N=53)
Upto 25km	7	20
More than 25km	2	33

62.3% of patients in late stage were hailing from areas greater than 25km away from a tertiary centre while only 22.2% patients in early

stage were from >25km area. This correlation was found statistically significant ( $p=0.025$ ).

## Discussion

Head and neck cancer shares about 1.8% of all cancers worldwide in terms of incidence and having a high mortality rate of about 72% on incidence [2]. The mortality rate is higher in our country as compared to other developed countries just because of their late presentation and delay in their early diagnosis. Various host related factors determine not only the stage of presentation of cancer but also treatment decision and outcome of disease [4].

The association between head and neck cancers and socio-economic factors remains under-researched and poorly understood, and therefore, this study is very relevant.

Some attempts have been made previously to determine the affect of socio-economic indices on quality of life after definitive treatment in head and neck cancer [5], but no such Indian study has been conducted to determine their role in diagnosis of cancer.

Presentation of cancer varies largely as a result of lifestyle and thus a consequence of the conditions in which individuals live and work. This lifestyle has been highly influenced by the person's annual income which has come to be highly significant in our study ( $p=0.003$ ). As far as education of patient is concerned; it had a statistically significant elevated risk of head and neck cancer among the uneducated and school dropouts. The effect of education may be attributed to its influence on risky behaviours and lifestyle choices. Similar type of result was concluded by various studies conducted at other geographic area populations [6,7].

Our study showed that incidence of head and neck cancer is more in males (40s and 50s) as compared to females irrespective of stage. Our finding is in agreement with the study conducted by WHO [2] and University of Texas [6].

Majority of patients of early stage cancers belong to a younger age group in comparison to patients of late stage who belong to an older age group. Various socio-economic indices (such as occupation, marital status, ethnicity and education of their children) have no direct influence on the late presentation of head and neck cancers. Some western studies do not support our result stating statistically significant increase in head and neck cancer incidence for adult men with status as single or never married and unemployed or unskilled employment life time [7,8].

Along with these indices, we have also tried to investigate certain other aspects corresponding to the same but these have no previous literature to correlate upon. In the field of previous medical consultations before being diagnosed as to have cancer, majority of patients have gone for 1-2 previous consultations. This suggest that the patient first prefers to go to a local nearby doctor and later if not satisfied or cured then finally goes to a tertiary centre.

Most of the cancers were detected by doctors at the post-graduate level in both early and late stages but still some of the graduates have succeeded in early detection of cancers. These are the few graduates sitting at primary or secondary centres and have diagnosed the case histopathologically. The patient is then referred to tertiary hospital for

further evaluation. Similar study was conducted in Canada for oral cancers and they concluded that dentists also play a significant role in disease identification [9].

In case of alternate medicine, 26% of patients took ayurveda predominately compared to homeopathy. This suggests that other medical treatments for cancer are still popular among our people.

Major percentage of patients in early stage resides within the 25km range from the nearby tertiary hospital while greater percentage in late stage is outside this limit. People living in areas with limited access to health care services have poorer health/prognosis then people living in metropolitan areas. Geographical isolation, poorer transport links, shortage of health care providers and more difficult access to health care are probably contributing factors along with a high proportion of indigenous people and generally lower socio-economic status of residents of remote areas. This shows that distance is a significant negative factor for causing delay in presentation in our patients and goes in coordination with various other reference studies [7,8,10]. All these above mentioned factors are also contributing to the delay in early diagnosis of cancer.

## Conclusion

Our study of head and neck cancers revealed that economic status, education and distance of a tertiary centre have a significant influence on the time of presentation. Specialist doctors are better at making a diagnosis of cancer, while alternate medicine causes a delay in definitive treatment of patients.

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