



Original Research Article

Demographic and Socio-Economic Study on Head and Neck Cancer in Andhra Pradesh, India

K. Swapna* and G. Sudhakar

Department of Human Genetics, Andhra University, Visakhapatnam, India

*Corresponding author

ABSTRACT

Keywords

Head and Neck cancer, Odds ratio, Socio-Economic Study, and cancer patients

The main aim of this study is to assess the Socio economic and Demographic profile of Head and Neck cancer patients in Andhra Pradesh, India. In this retrospective study, 103 patients with head and neck cancers comprised in the case group. All patients completed a questionnaire regarding occupation, socio economic status and area of residence. In this study the highest number of Head and Neck Cancer (HNC) patients is from urban areas with 36.89% and (OR=0.83 95%CI=0.367 -1.917,P=0.678). The quantification of socio economic study revealed that more number of HNC cases were recorded in lower income group of total 87(84.47%) (OR=1.03,95%CI=0.342-3.104,P=0.956). Whereas, daily wage earner are highest number out of all the occupational exposure cases with head and neck cancer.30 (29.13%)and(OR=2.91,95%CI=1.1754to 4.881,P=0.0115). This study analysis reveals that occupation was the significant risk factor for the development of head and neck cancer. Socio economic status and area of residence shows no significant association with head and neck cancer patients.

Introduction

Among all other cancers, Head and Neck cancer is the 8th most common cancer with approximately 650,000 incidences and 350,000 deaths annually and more predominant throughout the world (Parkin et al., 2005; Ragin et al., 2007).Recent reports say that 57.5% of global head and neck cancers occur in Asia, (Sturgis et al., 2004). In India, it accounts for 30% of all cancer incidences and the most common cancer among males and third most common cancer in females (Mathew 2007).

In developing countries, awareness regarding disease outbreak and risk factors is very low or the most of the part comes under rural areas. In the case of HNC, mostly people affected in rural areas are commonly used the tobacco products either in the form of cigarette or bidis or smoker tobacco. Occupational data study has been defined as the study of the effects of workplace exposures on the frequency and distribution of diseases and injuries in the population. Socioeconomic status is difficult to quantify.

It is made up of many variables such as occupation, family income, educational achievement, living conditions and social standing. Socioeconomic disproportions are consistently reported for total mortality and for many causes of death.(Steerland K et al.,2004).The men of lower socio economic status includes higher cancer mortality rates(Menvielle G et al.,2005).Socio-economic status is most common variables affecting health related quality of life and an important prognosticator of disease morbidity and mortality.(Madani AH et al.,2010)The aim of this study is to assess the socio-demographic profile of HNC cancer patients in Andhra Pradesh, India.

Materials and Methods

This study was done at Mahatma Gandhi Cancer hospital in Visakhapatnam, Andhra Pradesh, India. The study populations were subjects with HNC cancer who reported for treatment at the hospital. The sample size consisted of 103 HNC cancer patients who reported during the year 2011 - 2013.Statistical inference was made on the data which was collected for head and neck cancer by using odds ratio or Analysis of Variance (ANOVA).The significance of correlation for the present data was calculated by Medcalc software.(P value <0.01 is considered as statistically significant).

From table 1, it is evident that out of 103 patients, 65 males and 38 females. Males are categorically identified from 23 i.e. 35.38% from rural area and the 23 (35.38%) from urban area. The remaining 19 patients were observed from semi urban area with 29.23%. Whereas in females, the ratio is different, considering the females from different areas. Out of 38, 10 patients (26.32%) are from rural, 15 (39.47%) from urban and 13 (34.21%) from semi urban back grounds

respectively. Subsequently, the highest number in our HNC patients are from urban areas with 38(36.89%) followed by 33 members (32.04%) in rural and 32(31.07%) from semi urban areas of living. These data are statically examined which revealed that P value is insignificant as the values are greater than the table value 0.01%.

From the observation in the table 2, the occupational patterns come under private employees of total 19 individuals. This is 18.45% out of 103. Males are 14 (21.50%) and females are 5 (13.16%). Whereas, daily wage earner are highest number out of all the HNC case with 30 (29.13%). Male to Female ratio is 22 (35.38%) to 8 (21.05%). Coming to females, it showed second highest with 27 cases (26.21%) in males 23 (35.38%) and females 4 (10.53%) whereas 20 housewives were recorded in HNC case. To the extent, the data has been calculated for significance. It showed significant result as the P-value is in the range.

The area of residence and occupation of the cancer patients in relation to prevalence of head and neck cancer has been tabulated for their association. The mean values for the residence is in between 1.2 to 1.4 and for occupation it is in 0.8 to 1.8 with its standard errors respectively. The 95% confidence intervals and P values are not significant in residence. But, significant in occupation with 0.001.

From the table 4, the HNC cases were recorded as lower status of total 87 (84.47%) and 6 patients (5.83%) in high socio economic status and 10 (9.71%) from middle class category.

In these, lower class males were recorded 55 individuals with 84.62% and stand highest in total cases. The high group females showed only 2 and this is the least among all

HNC cases in this study. Remaining cases showed 32 (84.21%) in lower females and 6 males from middle class and 4 people each with 10.53% in middle class females and 6.15% high class males respectively. considering the statistics, significance of the odds ratio and P value showed the in signification result. There is no variation.

Assessment of residence showed that the 35.38% from rural area and another 35.38% from urban area. The remaining 29.23% from semi urban areas. Subsequently, the highest number in our HNC patients is from urban areas with 36.89% and (OR=0.8395% CI=0.367 -1.917, P=0.678). Most of the rural people are settled in urban areas for livelihood. Another study reports showed that among urban, one out of every 27 men and one out of every 64 women would contract head and neck cancer and 3.7% of the urban male population and 1.6% urban female population will develop head and neck cancer. Among rural population, one out of every 54 men and one out of every 494 women would contract head and neck cancers, 2% of the rural male population and 0.3% females will develop head and neck cancer (Elango JK et al., 2006). The study subjects belong to occupational exposure are categorized as private, Government employee, farmers, housewives and daily wage earners respectively. Mostly, farmers are prone to various forms of environmental factors. Private employees and daily wage earners, who are working in chemical industry and various firms that associate with steers full life may exposed to different chemicals and tobacco related products due to nicotine addiction. In this study greater part of the patients is from daily wage earners with 29.13%. (OR=2.91, 95% CI=1.1754 to 4.881, P=0.0115). Male to Female ratio in occupational patterns is 35.38% to 21.05%. But, 52.63% are housewives, 18.45% are of

private employees, 26.21% are farmers, where most of them exposed to pesticides and other environmental carcinogens. However, 6.80 % are of government employees. Occupational risk factor found to be significant with gender where p value is <0.01 in both males and females. Two International studies conducted in men by (Paget-Bailly .S et al., 2013). And women by (Carton M, et al., 2014) with head and neck cancer, it confirms the role of occupational exposure in HNC patients. Other study demonstrated that occupation was an independent risk factor for the development of head and neck cancers. People working at high risk jobs had a higher risk of malignancy (p=0.000, OR: 3.145; 95% CI: 2.2-5. 1). (Tevfik Pinar, MD et al., 2007) The association between residence and occupation of HNC patients observed that the residence has insignificant and occupation showed signifying results. Various risk factors associated with the head and neck cancer cases are proportionate on the occupation and income level such are lower, higher, middle class economic status respectively. In the case of lower income level groups, the people are prone to more tobacco use than alcohol. Tobacco cost less money compared against alcohol. So, they are more frequent enough to get addicted to tobacco use as daily wage earners. The quantification of socio economic study revealed that the HNC cases were recorded in lower income group of total 87 (84.47%) and (OR=1.03, 95% CI=0.342-3.104, P=0.956) Considering the statistics, there is no variation with socio economic status. Most of the study subjects belonged to lower middle and upper lower socio economic scale. This was similar to findings of the study by (Khandekaret al., 2006).

Due to various life styles and poor working measures and management strategies in the industries and in private jobs, use of

pesticides and various types of cancer causing agents or prone to UV radiation in agricultural labors, not following safety standards and not enough enforcement. Higher number of male prevalence in the present study suggests that males often indulged into habits like smoking, tobacco chewing, alcohol consumption and combination of these and occupational risk

factors like exposure to other environmental carcinogens during the working time. statistical analysis showed Occupational risk factor found to be significant both in male and female. There is no significant association between area of residence, socioeconomic status of the head and neck cancer patients.

Table.1 Area of residence in relation to prevalence

Area of living	Gender		Odds Ratio	95% Confidence Interval	P Value
Rural	Male	23 (35.38%)	1.5333	0.634 to 3.7082	0.3428 ^{NS}
	Female	10 (26.32%)			
	Total	33 (32.04%)			
Urban	Male	23 (35.38%)	0.8397	0.3678 to 1.9172	0.6783 ^{NS}
	Female	15 (39.47%)			
	Total	38 (36.89%)			
Semi Urban	Male	19 (29.23%)	0.7943	0.337 to 1.8719	0.5985 ^{NS}
	Female	13 (34.21%)			
	Total	32 (31.07%)			

*p< 0.01- Significant; **p< 0.02 –moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

Table.2 Occupation and gender in relation to prevalence

Occupation	Male(%) (N=65)	Female(%) (N=38)	Total(%)	Odds Ratio	95% Confidence Interval	P Value
Private Employee	14 (21.54)	5 (13.16)	19 (18.45)	28.2174	1.83421to 437.33	0.0145*
Farmer	23 (35.38)	4 (10.53)	27 (26.21)	4.6548	1.4679 to 14.7606	0.0090*
House wife	0	20 (52.63)	20 (19.42)	0.0069	0.0004 to 0.1194	0.0006*
Daily wager	22 (33.85)	8 (21.05)	30 (29.13)	2.9186	1.1754 to 4.8818	0.0115*
Govt Employee	6 (9.23)	1 (2.63)	7 (6.80)	4.7627	1.4354 to 32.5154	0.021*

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

Table.3 Area of residence and occupation

Source	Mean	Std. Error	95% Confidence Interval	P value
Residence				
A)Rural (n=33)	1.3145	0.03132	1.1383 to 1.3394	0.7235 ^{NS}
b) Urban (n=38)	1.4398	0.04424	1.2467 to 1.5409	
c)Semi Urban (n=32)	1.2173	0.06687	1.8774 to 2.3426	
Occupation				
1 (n=19)	1.0032	0.06722	0.7432 to 1.1628	<0.001*
2 (n=27)	1.3381	0.14254	1.0365 to 1.5511	
3 (n=20)	0.9000	0.08348	0.8807 to 1.2193	
4 (n=30)	1.8912	0.05817	1.7748 to 2.1426	
5(n=07)	0.8846	0.26032	0.3463 to 1.4354	

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

Table.4 Socio-economic status of cases

Socio economic status	Male (%) (N=65)	Female (%) (N= 38)	Total(%)	Odds Ratio	95% Confidence Interval	P Value
Lower	55(84.62)	32(84.21)	87(84.47)	1.0313	0.3426 to 3.1041	0.9564 ^{NS}
Middle	6(9.23)	4(10.53)	10(9.71)	0.8644	0.2278 to 3.2805	0.8304 ^{NS}
High	4(6.15)	2(5.26)	6(5.83)	1.1803	0.2058 to 6.7698	0.8524 ^{NS}

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

References

Carton M, Guida F, Paget-Bailly S, Cyr D, Radoi L, Sanchez M, Schmaus A, C  n  e S, Papadopoulos A, Menvielle G, F  votte J, Pilorget C, Molini   F, Bara S, St  ccke I, Luce D. Occupation and head and neck cancer in women-Results of the ICARE study. *Am J Ind Med.* 2014 Dec;57(12):1386-97. doi: 10.1002/ajim.22394. Epub 2014 Oct 28.

Elango JK1, Gangadharan P, Sumithra S, Kuriakose MA. Trends of head and neck cancers in urban and rural India. *Asian Pac J Cancer Prev.* 2006 Jan-Mar;7(1):108.

Khandekar SP, Bagdey PS, Tiwari RR. Oral cancer and some epidemiological factors: A hospital based study. *Indian J Community Med* 2006;31:157-9.

Mathews, M., West, R. and Beuhler, S. How important are out of pocket costs to rural patients' cancer care decision? *Cana. J. Rural Med.* 2007;14:54-60.

Madani AH, Dikshit M, Bhaduri D, Jahromi AS, Aghamolaei T. Relationship between selected socio-demographic factors and cancer of oral cavity - a case control study. *Cancer Inform* 2010;9:163-8.

- Menvielle G, Luce D, Geoffroy-Perez B, Chastang JF, Leclerc A. Social inequalities and cancer mortality in France 1975-1990. *Cancer Causes Control* 2005;16:501-13.
- Paget-Bailly S1, Guida F, Carton M, Menvielle G, Radoï L, Cyr D, Schmaus A, Cénéé S, Papadopoulos A, Févotte J, Pilorget C, Velten M, Guizard AV, Stücker I, Luce D. Occupation and head and neck cancer risk in men: results from the ICARE study, a French population-based case-control study. *J Occup Environ Med.* 2013 Sep;55(9):1065-73.
- Parkin DM, Bray F, Ferlay J, Pisani P. Estimating the world cancer burden: Globocan 2000. *Int J Cancer* 2001;94:153-6.
- Ragin CC, Modugno F, Gollin SM. The epidemiology and risk factors of head and neck cancer: a focus on human papillomavirus. *J Dent Res* 86:104-114.
- Steerland K, Hu S, Walker J. All-cause and cause-specific mortality by socioeconomic status among employed persons in 27 US states, 1984-1997. *Am J Public Health* 2004;94:1037-42.
- Sturgis EM, Wei Q, Spitz MR. Descriptive epidemiology and risk factors for head and neck cancer. *semin oncol.* 2004;31:726-733.
- Tevfik Pinar, MD PhD; Recep Akdur, MD; Arslan Tuncbilek, MD; Kadri Altundag, MD; and Mustafa Cengiz, MD Kirikkale and Ankara, Turkey The Relationship between Occupations and Head and Neck Cancers *journal of the national medical association* vol.99, no.1, January 2007 71.