

# Pattern of Occurrence of Primary Head and Neck Cancers in Jammu City- A Hospital Based Study.

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## ABSTRACT

**Background:** Head and neck cancers (HNCs) are a major form of cancers in India. The spectrum varies from place to place within the country because of significant diversified risk factors. Unfortunately, despite an increase in medical knowledge, survival rates of head and neck cancers have not been observed to improve greatly. This is true, especially in tumors located in obscure primary sites or late presentation. **Methods:** This is a retrospective study on patients with histologically confirmed diagnosis of head and neck cancer between May 2016 and July 2018 at department of ENT and Head and Neck Surgery, SMGS Hospital, Jammu. The histopathological diagnoses were analysed with respect to age, gender, addiction habits, site of tumor and statistical analysis was done. **Results:** A total of 425 cases were analysed. There were 399 males and 26 females with M: F ratio of 15:1. More than 97% patients were Squamous cell carcinoma. Maximum incidence (>60%) was in 40-60 years age group. Difference in incidence in males and females was significant in each age group ( $p < 0.05$ ). In patients of age <40 years oral cancers were common whereas in >40 years cancers of oropharynx and larynx were common. Tobacco smoking was a most prevalent risk factor for carcinoma oropharynx, larynx, and hypopharynx. Tobacco chewing was a most prevalent risk factor in females, young males, and carcinoma buccal mucosa patients. Alcohol consumption alone was observed in <1% patient as a risk factor. In oral tongue cancer, smoking and tobacco chewing were equally prevalent. Habit of tobacco chewing and alcohol were significantly higher in carcinoma buccal mucosa than other HNC suggesting synergistic effect specific to this site. **Conclusion:** Increased populace awareness programs emphasizing the preventable factors associated with this cancer and change in life style will decrease morbidity and mortality associated with late stage presentation.

**Keywords:** Cancer, Risk factor, smoking.

## INTRODUCTION

Cancer is a non-communicable disease with a high rate of disability and death, resulting as one of the diseases with the greatest disease burden in the world.<sup>[1]</sup> Head and neck cancers (HNCs) are a major form of cancers in India, accounting for 23% of all cancers in males and 6% in females.<sup>[2]</sup> In India, the disproportionately higher incidence of HNC compared to other common malignancies may be due to excessive consumption of tobacco in various forms with and without alcohol, low socioeconomic status leading to poor oral and dental hygiene, poor diet, and infections of viral origin.<sup>[3]</sup> The challenge in the management of HNC has been attributed to late presentation in the hospital with inaccessible and

limited health facilities contributing to poor treatment outcome. This has been attributed to the fact that most often the diagnosis is missed and those who are diagnosed fail to come back for treatment due to socio cultural reasons which includes seeking spiritual and trado-medical alternatives. It is necessary to identify the differences if any in the sites, patterns, and incidences of the disease among various communities living in geographic areas having varying pattern of climate and physical environments to identifying dietary habits, social customs, and such other factors.

## MATERIALS AND METHODS

Study population consists of 425 patients registered and finally diagnosed with head and neck malignancy in our institute between May 2016 and July 2018. Data pertaining to these patients were entered in standardized questionnaire. These were in context to age, sex, site involved, smoking, alcohol and chewing habits, and other clinical details. Patients on the basis of histopathology were

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categorized into squamous cell carcinoma and other malignancy. Various malignancies of the head-neck region were classified according to International Classification of Disease (ICD) coding system devised by WHO (10th revision) using ICD codes from C00 to C80.

### Statistical analysis

Statistical analysis was done on the data collected, and result was formulated. Significance (P) values and correlation values were determined by Pearson Chi-square test by correlating two variables at a time from age, gender, risk factor, and site of tumor.  $P < 0.05$  was considered significant and  $P > 0.05$  was considered statistically insignificant.

## RESULTS

Study population consists of 399 males and 26 female patients of HNC. Male: female ratio was 15:1. More than 97% cases were Squamous cell carcinoma. Difference in incidence in males and females was significant in each age group ( $P < 0.05$ ). Maximum incidence of HNC was found in 51–60 year age group (34%) but in male incidence was almost equal in 51–60 and 41–50 age group ( $n = 246$  and  $241$ , respectively). [Figure 2] More than 60% of the patients were 41–60 year of age.

Most common site of HNC was oral cavity ( $n = 140$ ) followed by oropharynx ( $n = 136$ ) and larynx ( $n = 90$ ). Malignancy arising from hypopharynx ( $n = 18$ ), nose and paranasal sinuses (PNS) ( $n = 10$ ), and nasopharynx ( $n = 3$ ) were uncommon. Secondary neck with unknown primary constituted 5% of all HNC. Tumors arising from salivary glands ( $n = 4$ ), thyroid ( $n = 2$ ), external auditory canal ( $n = 1$ ) and ear pinna ( $n = 1$ ) all together account for  $<2\%$  of HNC. Most common subsite of HNC was base of tongue (BOT) (16%) followed by buccal mucosa (14.2%)

[Figure 3]. Oral tongue (13.5%) [Figure 4] and supraglottic larynx (13.5%) had equal incidence. Oral cancer was most common HNC in  $<40$  year age groups and ranked second and third, respectively, in 41–50 and above 50 age groups. Oropharynx was most common HNC in more than 40 year age groups. Carcinoma larynx has shown consistent increase in incidence with an increase in age and ranked second common HNC in more than 40 year age groups. Secondary neck with unknown primary presents 5–8% of HNC in all age groups. Cancer arising from salivary glands, nose, and PNS were more common in  $<50$  year age group. [Figure 1] [Table 2]

In this study, tobacco smoking was found to be most prevalent risk factor in total (35.8%) as well as in male patients (37.3%). Tobacco chewing only was uncommon (8.7%) in males but in combination with smoking, it accounts second common risk factor (19%). In female patients, most prevalent risk factor

was tobacco chewing (34%) followed by smoking (16%) and smoking with tobacco chewing (14.2%). Alcohol addiction was rare ( $<5\%$ ) in females while in males, it was found either with smoking (10%) or with smoking and chewing tobacco (9.3%). Only 30% female and 14% male were free of all these risk factors [Table 1]. In  $<30$  year age group, tobacco chewing (26.7%) was a most common risk factor, smoking (13.3%), smoking with tobacco chewing (15.5%), and smoking with chewing and alcohol consumption (13.3%) had equal prevalence. Above this age group, smoking alone was most prevalent risk factor and found in 34–50% of each age group. Smoking with tobacco chewing and alcohol was much common in below 50 year age groups. Smoking with alcohol habit was present in 10% of patients in each age group. Thirty-three percent of more than 80 year age patients were free of all these risk factors compared to  $<20\%$  patients in other age groups.

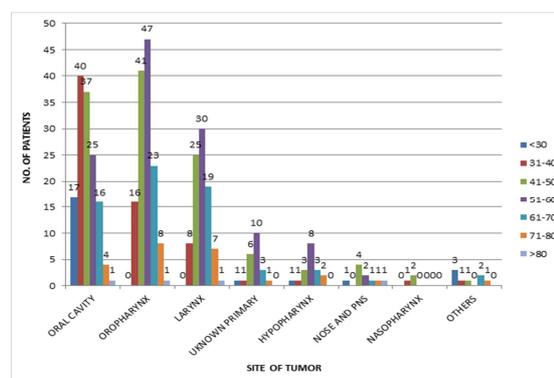


Figure 1: Comparison of site of tumor in different age groups.

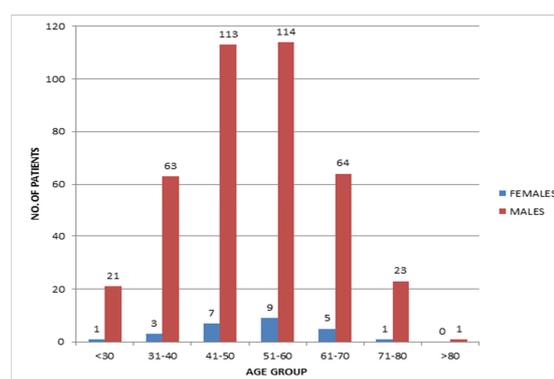


Figure 2: Prevalence of HNC in males and females of different age groups.

In patients of carcinoma oral tongue and buccal mucosa, tobacco chewing was present in 22% and 24% population, respectively. Smoking alone was more prevalent in oral tongue (28% vs. 8%) and tobacco chewing with smoking (14% vs. 21%), or with smoking and alcohol (16% vs. 33%) was more prevalent in buccal mucosa. In patients of carcinoma BOT and tonsillar fossa smoking, tobacco chewing, and tobacco chewing with smoking was present in

48%, 3.5%, and 16% population, respectively. Combined habit of smoking, alcohol, and tobacco chewing was found to be more common in carcinoma BOT (16% vs. 5%). Only 14% cases of carcinoma BOT and 4% cases of carcinoma tonsil were free of all these risk factors. [Table 1] [Table 2]

**Table 1: Genderwise comparison of risk factors**

Risk Factor	Males	Females	Total
Smoking+Alcohol	40	0	40
Smoking	148	5	153
Smoking+Chewing	75	2	77
Smoking+Chewing+Alcohol	36	1	37
Chewing	35	10	45
Chewing+Alcohol	7	0	7
Alcohol	1	0	1
Not Any	58	8	66

**Table 2: Distribution of patients according to site of tumor**

Site	Subsite	n(%)	n(%)
Oral cavity			140(32.9%)
	Oral tongue	57(13.4%)	
	Buccal mucosa	60(14.1%)	
Oropharynx			136(32%)
	Base of tongue	68(16%)	
	Tonsillar fossa	38(8.9%)	
Larynx			90(21%)
	supraglottis	57(13.4%)	
hypopharynx			18(4.2%)
Nose and PNS			10(2.3%)
Nasopharynx			3(0.7%)
Unknown primary			22(5.1%)
Others			8(1.8%)



**Figure 3: Patient presented with Ca Buccal mucosa.**



**Figure 3: Patient presented with Ca tongue.**

## DISCUSSION

As per various studies published squamous cell carcinoma varying from 88% to 96% is the most common histological subtype.<sup>[4-7]</sup> In our study, squamous cell carcinoma was observed in more than 97% cases. Male: female ratio is commonly 1:1–3.1:1.<sup>[4,6]</sup> In the current study, Male: female ratio was 15:1. Geographical variations in the incidence of HNC in different part of world and within the country are indicative of differences in the prevalence of regional risk factors. This variation in different regions of India is supported by various studies.<sup>[4,6,8,9]</sup> According to recent studies in different region of India on HNC patients, larynx was most common site of HNC in South India<sup>[10]</sup> (38.37%), oral cavity in Uttar Pradesh,<sup>[5]</sup> and oropharynx in Northeast and Meghalaya (24%).<sup>[4,11]</sup> In this study, oral cancer (32.8%) was found to be most common HNC and BOT was most common subsite followed by buccal mucosa Carcinoma hypopharynx (<5%) was uncommon in this population. In India, tobacco consumption is responsible for half of all the cancers in men and a quarter of all cancers in women.<sup>[12]</sup> Variations in the incidence of HNC by site are mostly related to the relative distribution of major risk factors such as tobacco or betel quid chewing, cigarette or bidi smoking, alcohol consumption, and viral infections. India has one of the highest rates of oral cancer in the world, partly attributed to high prevalence of tobacco chewing.<sup>[2]</sup> The prevalence of both smoking and chewing tobacco in various forms varies significantly among different states in India. Some regional patterns have been observed for chewing tobacco. Tobacco consumption is highest in the least educated, poorest, and scheduled castes and scheduled tribe Prevalence of tobacco consumption increases up to the age of 50 years and then there is decline in Indian population.<sup>[13]</sup> In this study, maximum number of HNCs are present in 50–60 year of age and >60% of HNC were found in 40–60 year of age. Prevalence was equal in 41–50 year and 51–60 year age group in males. Smoking is relatively more pronounced factor for cancer of pharynx and larynx than cancer of oral cavity.<sup>[14]</sup> In this study, smoking was present in >80% cases of cancer of oropharynx, larynx, and hypopharynx and only 50% cases of oral cancer. There is 6-fold higher risk of oral cancer among the people having habit of betel nut and tobacco (gutkha).<sup>[15]</sup> In this study, tobacco chewing including betel nut was present in >60% cases of oral cancer and only 30% of pharynx and larynx cancer. This habit was found to be more common in younger age group and female patients that may be the reason for oral cancer as most common cancer in this group. When tobacco smoking and alcohol consumption are combined, they may increase the risk by more than 15-fold.<sup>[16]</sup> This effect is possibly because alcohol

may act as a solvent and enhance the penetration of carcinogens into target tissues. In this study combined habit of tobacco chewing and alcohol consumption was most prevalent predisposing factor for oral cancer. In study population, HNC prevalence was very low in females and male: female ratio was exceptionally high. A detailed study on this population can find associated factor responsible for this difference which could be used for prevention of HNC in other population.

## CONCLUSION

HNCs are one of the most common malignancies prevalent in India with wide variations in risk factors, sites of involvement, geographical, and demographic characteristics. Increased populace awareness programs emphasizing the preventable factors associated with this cancer and change in life style will decrease morbidity and mortality associated with late stage presentation.

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