IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 1 Ser.5 (January. 2020), PP 45-51
www.iosrjournals.org

A Prospective Epidemiological Profile of Head and Neck Cancers in a Tertiary Care Hospital

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Abstract
Introduction: *Head and neck cancer is a complex disorder that includes mostly squamous cell carcinomas that can develop in the throat, larynx, nose, sinuses, and mouth. Head and neck squamous cell carcinoma (HNSCC) remains a major clinical challenge in oncology and represents the sixth most common neoplasm in the world today.*
Materials and Methods: *This study was conducted at Department Of Surgery & Department of Radiotherapy, Mahatma Gandhi Memorial Medical College, Jamshedpur, Jharkhand from January 2018 to December 2018. The study included patients with Head and Neck Squamous Cell Carcinoma (HNSCC) registered with hospital from January 2018 to December2018. It was a prospective and retrospective study. Patients having histopathological (HPE) confirmation of the disease were enrolled for the study. An informed consent was taken from all the patients before including in the study. All the demographic & clinical details of the recruited patients were studied thoroughly including history, physical examination, investigations and mode of treatment. The site of cancer was classified based on the second edition of the International Classification of Disease for oncology, depending on the 11 presentation sites of HNSCC: base of tongue, tongue, buccal mucosa, palate, floor of mouth, lip, gingiva, oral cavity, oropharynx, nasopharynx, and hypopharynx.*
Results: *A total of 106 patients of Head and Neck Cancer were enrolled in this study to analyse the clinico epidemiological characteristics of head and neck cancer in Jharkhand population of India. The number of male patients was 78(73.58%) and number of female patients was 28(26.42%), which is depicted in figure 1. Male to female ratio was 2.7: 1. The mean age was 55.3 years. The age distribution of patients is showed in table 1 and we found that in all age groups, number of males was more than female subjects.*
Conclusion: *A male preponderance was noted in our population and mostly patients were more than 40 years of age at presentation. Unhealthy lifestyle which includes tobacco consumption, lack of balanced diet and poor orodental hygiene play significant role in the development of head and neck cancers. Good education and lifestyle modification can greatly help in reducing the burden of these malignancies in our population.*
Key Words: *Head and neck cancer, orodental hygiene, HNSCC, HPE*

Date of Submission: 26-12-2019 Date of Acceptance: 10-01-2020

I. Introduction

Head and neck cancer is a complex disorder that includes mostly squamous cell carcinomas that can develop in the throat, larynx, nose, sinuses, and mouth. Head and neck squamous cell carcinoma (HNSCC) remains a major clinical challenge in oncology and represents the sixth most common neoplasm in the world today.[1] Annually, about 6,50,000 new cases of head and neck cancers are diagnosed all over the world with a ratio of 3:1 between males and females.[2] Squamous cell carcinoma is characterized by malignant neoplasm of squamous epithelium with marked differentiation and predisposition to primitive and widespread lymph nodal metastasis.[3]

Many risk factors have been implicated for the causation of head and neck cancers.[4] The oral habits of betel quid chewing, alcohol drinking and tobacco smoking have been documented as risk factors for HNC.4-6 Tobacco and betel quid may act synergistically as a carcinogen.[5] Human papillomavirus (HPV), the causal agent of cervical cancer, has been suggested to play a role in the etiology of cancer of the oral cavity and oropharynx. The most important oncogenic types are HPV type 16 (HPV-16) and HPV-18.[6]

II. Materials And Methods

This study was conducted at Department Of Surgery& Department of Radiotherapy Mahatma Gandhi Memorial Medical College, Jamshedpur, Jharkhand from January 2018 to December 2018. The study included patients with Head and Neck Squamous Cell Carcinoma (HNSCC) registered with hospital from January 2018 to December 2018. It was a prospective and retrospective study. Patients having histopathological (HPE) confirmation of the disease were enrolled for the study. An informed consent was taken from all the patients before including in the study. All the demographic & clinical details of the recruited patients were studied thoroughly including history, physical examination, investigations and mode of treatment. The site of cancer was classified based on the second edition of the International Classification of Disease for oncology, depending on the 11 presentation sites of HNSCC: base of tongue, tongue, buccal mucosa, palate, floor of mouth, lip, gingiva, oral cavity, oropharynx, nasopharynx, and hypopharynx.

III. Results

A total of 106 patients of Head and Neck Cancer were enrolled in this study to analyse the clinico epidemiological characteristics of head and neck cancer in Jharkhand population of India. The number of male patients was 78(73.58%) and number of female patients was 28(26.42%), which is depicted in figure 1. Male to female ratio was 2.7: 1. The mean age was 55.3 years. The age distribution of patients is showed in table 1 and we found that in all age groups, number of males was more than female subjects. However in the age group <40 years the number of males was significantly higher than females (p=0.005). Among both males and females, the highest incidence of HNSCC was seen within the age group of 51-60 years. The overall and sex wise age distribution of patients is shown in figure 2 and 3. The most common primary site of disease was Oral Cavity – 36(33.96%), followed by Larynx - 28 (26.41%), Pharynx in 16(15.09%), Nasopharynx in 10(9.43%), Sinonasal in 10(9.43%) and Tonsil in 6 cases (5.66%). The distribution of cases as per primary site and subsite of disease is shown in figures 4 & 5. Sex wise distribution as per site was as follows- nasopharynx 8 males, 2 females; sinonasal 5 males and 5 females; oral cavity 20 males, 16 females; tonsil 4 males, 2 females; pharynx 11 males, 5 females & larynx 24 males, 4 females. Sex wise distribution of patient as per site is shown in table 2. Our patients usually presented with advanced stage, the number of patients with Stage I disease was 12(10.37%) cases, Stage II disease was 28(25.47%) cases, Stage III disease was 38(37.73%)cases and Stage IV disease was 28(26.41%) cases. The sex wise T, N, M and combined stage distribution of patients is shown in tables 3,4,5&6. All the patients had histology of squamous cell carcinoma from the primary site. The number of cases with well differentiated tumours was 64(60.37%), with moderately differentiated tumors 34(32.07%) and with poorly differentiated tumours were 8(7.54%).

The distribution of cases according to grade of tumors is shown in table 7. The number of patients treated with 'surgery alone' was 10 cases, with 'radiotherapy alone' was 18 cases, with both radiotherapy and chemotherapy was 30 cases with surgery followed by adjuvant chemotherapy and radiotherapy was 40 cases. 'Chemotherapy alone' was not given in any patient and 8 patients did not receive any treatment. Distribution of cases as per treatment modality used is shown in table 8. The number of patients with cigarette smoking alone was 32 cases, with 'Hukka' smoking alone was 16 cases with tobacco chewing alone was 30 cases. The combined use of two or more forms of tobacco was seen in 16 cases and 12 cases did not use any form of tobacco. Overall 89% of patients were consuming tobacco in one form or the other. Distribution of patients as per the form of tobacco used is shown in table 9. The number of patients with alcohol consumption was two cases. The number of patients exposed to 'Dietary Risk Factors' was 30(28%) cases. The number of patients with poor orodental hygiene was 52(49%) cases, with average orodental hygiene was 32(30%) cases and with satisfactory orodental hygiene was 22(21%) cases. Distribution of cases as per quality of orodental hygiene in shown in table 10. Our patients mostly belonged to low or medium social class. The number of patients belonging to low socio-economic class was 60(56.60%) cases, middle socio-economic class was 38(35.89%) cases and upper socio-economic class was 8(7.54%) cases. Distribution of patient as per social class is shown in table 11. The number of patients belonging to rural area was more as compared to urban {76(71.69%) versus 30(28.30%)} cases respectively.

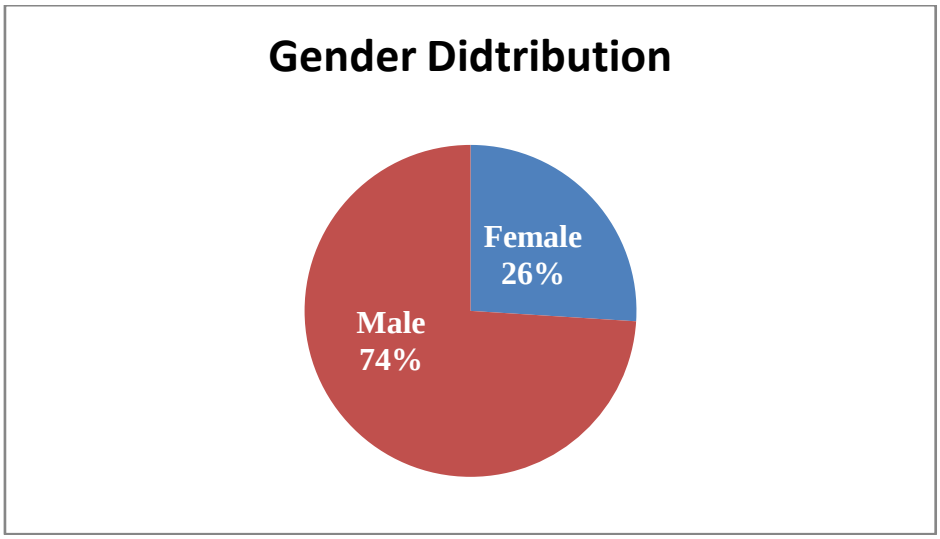

Figure 1: Males and Females distribution

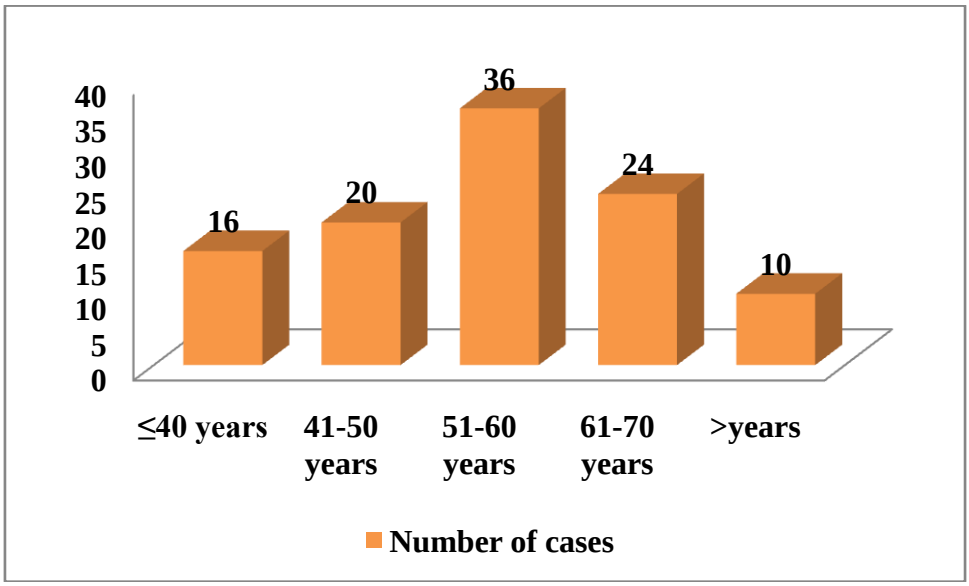

Figure 2: Age distribution of patients

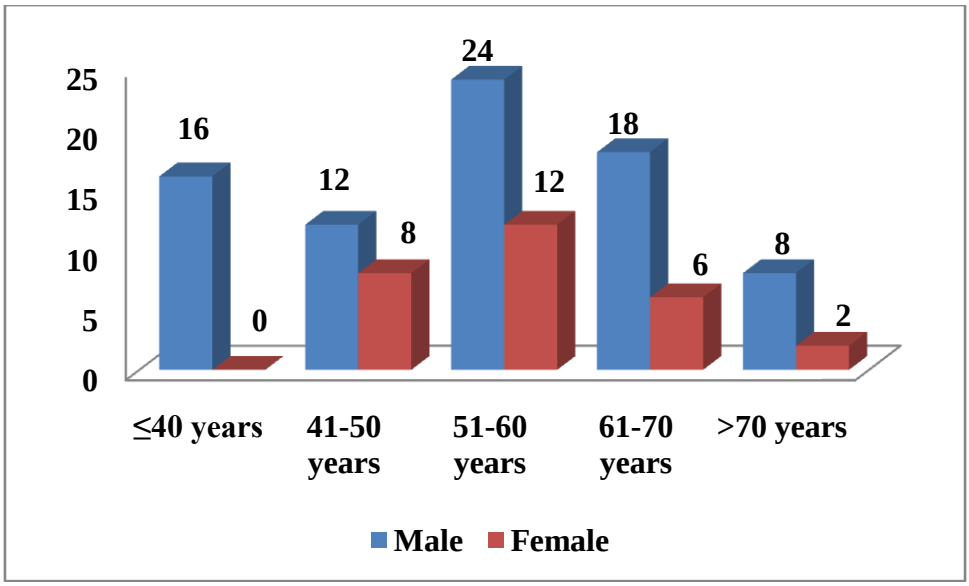

Figure 3: Age and sex wise distribution of patients

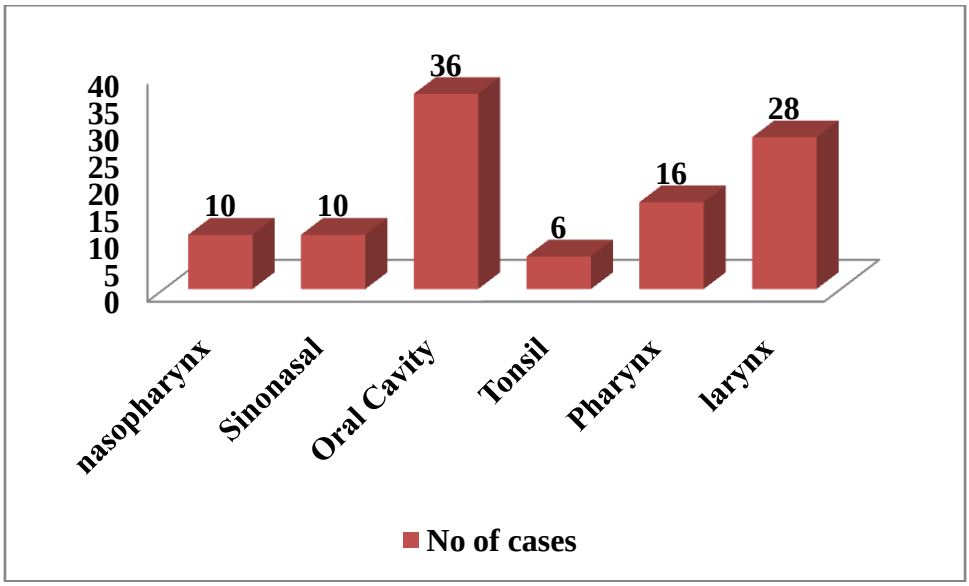

Figure 4: The distribution of cases as per Sub site of disease

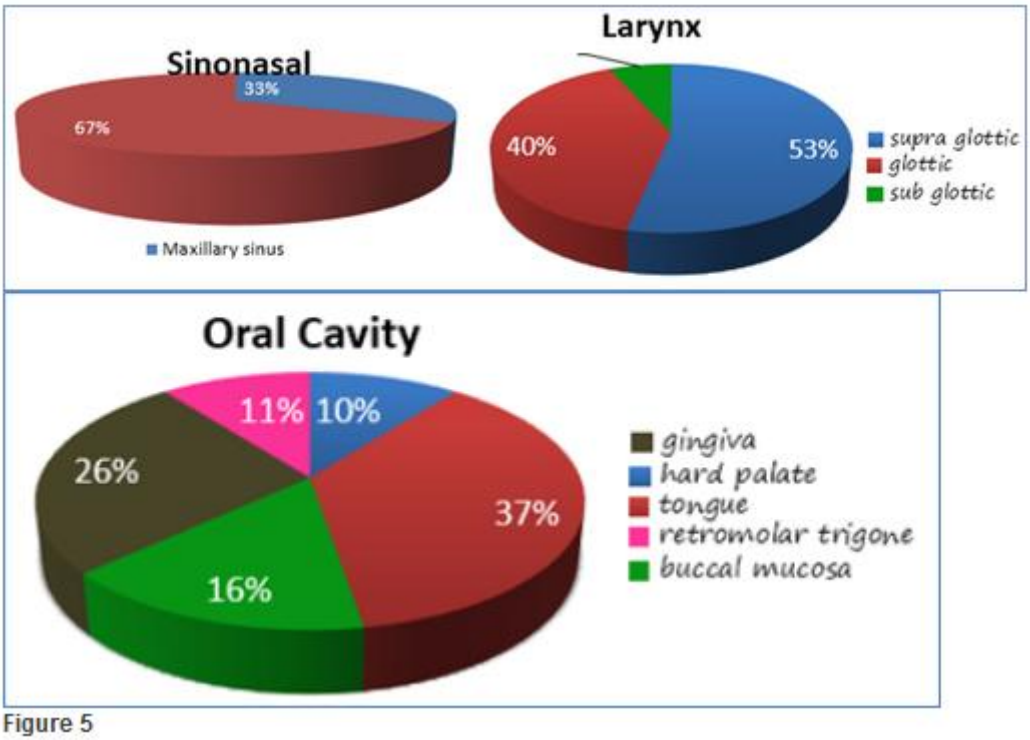

Figure 5: The distribution of cases as per Sub site of disease.

Age group (years)	Total no of patients	males	Females	P Value
<40	16(30.18%)	16(20.51%)	0(0%)	**0.005**
41-50	20(37.73%)	12(15.38%)	8(28.57%)	0.1
51-60	36(67.92%)	24(30.76%)	12(42.85%)	0.25
61-70	24(45.28%)	18(23.07%)	6(21.42%)	1.0
>70	10(18.86%)	8(10.25%)	2(7.1%)	1.00

Table 1: Distribution of cases based on sex and age-group

Site	Males	Females
Nasopharynx	8	2
Sino nasal	5	5
Oral cavity	20	16
Tonsil	4	2
Pharynx	11	5
Larynx	24	4

Table 2: Sex wise distributionas per site

Stage	Males	Females	P Value
I	6(7.69%)	6(21.42%)	1.00
II	20(25.64%)	8(28.57%)	0.8
III	28(35.89%)	10(35.71%)	0.2
IV	24(30.76%)	4(14.28%)	0.14

Table 3: Sex wise distribution as per stage of disease

Stage	Number of males (%)	Number of females (%)
T1	6(7.69%)	4(14.28%)
T2	32(41%)	10(35.71%)
T3	34(43.5%)	12(42.85%)
T4	6(7.69%)	2(7.1%)

Table 4: Sex wise T stage distribution of patients

Stage	Males	Females
N0	32(41.02%)	18(64.28%)
N1	26(33.33%)	4(14.28%)
N2	16(20.51%)	6(21.42%)
N3	4(5.1%)	0(0%)

Table 5: Sex wise N stage distribution of patients

M Stage	Males	Females
M0	74 (94.8%)	28 (100%)
M1	4(5.12%)	0(0%)

Table 6: Sex wise M stage distribution of patients

Grade	No./ Percentage
Well differentiated	64 (60.37%)
Moderately differentiated	34 (32.07%)
Poorly differentiated	8 (7.54%)

Table 7: Sex wise T stage distribution of patients

Treatment modality used	Number
Surgery	10
Radiotherapy alone	18
Radiotherapy & chemotherapy	30
Surgery followed by adjuvant chemotherapy & radiotherapy	40
No treatment	8

Table 8: Distribution of patient as per treatment modality used

Form of Tobacco	Number (%)
Cig. Smoking	32
Hukka smoking alone	16
Tobacco chewing alone	30
Combines use of two or more forms of tobacco	16
Did not use any form of tobacco	12

Table 9 : Distribution of patient as per the form of tobacco used

Quality of orodental hygiene	Number
Poor oro dental hygiene	52 (49%)
Average oro dental hygiene	32 (30%)
Satisfactory oro dental hygiene	22 (21%)

Table 10 : Distribution of cases as per quality of orodental hygiene

Socio economic class	Number
Low socio economic class	60 (56.60%)
Middle socio economic class	38 (35.89%)
Upper socio economic class	8 (7.5%)

Table 11: **Distribution of patient as per social class**

IV. Discussion

Head and neck cancer includes malignant tumors of the upper aero-digestive tract & anatomically it includes the oral cavity, pharynx and larynx. About 40% of head and neck cancers occur in the oral cavity, 15% in the pharynx, 25% in the larynx, and the rest in the remaining sites (Salivary glands, thyroid).[7]

The incidence of head-and-neck cancer increases with the age, especially after 50 years of age.In our study 66 % of patients were above the age of 50 years and 84% of patients were above the age of 40 years. Only 15% of patients were below the age of 40 years. This indicates that the age distribution of head and neck cancers in our population is similar to other parts of the world.[8]

Relative to men, head and-neck cancer is relatively less common in women. Head and neck cancers are nearly twice as common among men as they are among women.In our study the male to female ratio was 2.7: 1, i.e. 74% of patients were males and 26% were females. This shows that Head and Neck Cancers are more common in males in our population also and the distribution is similar to the trend in rest of the world.[9]

Etiology of head and neck carcinomas remains a matter of investigation. In the development of cancers of oral cavity, pharynx and larynx both tobacco and alcohol consumption are well-established risk factors. Approximately 60% of oral cancers in men and 30% in women could be attributed to smoking alone.[10] In our study 89% of patients were consuming tobacco in one or the other form. Sixty percent of patients had history of tobacco smoking and 30% consumed smokeless tobacco (Snuff). Only 10% of patients were not consuming tobacco. Around 3% of patients had alcohol consumption and 2% consumed both tobacco and alcohol. This shows that tobacco consumption alone is a major risk factor in our population for the development of Head and Neck Cancers. Alcohol consumption is quite less in our population due to religious reasons but still Head and Neck Cancers have a very high incidence in tobacco consumers indicating that it is not necessary to have consumption of both tobacco and alcohol for the development of Head and Neck Cancers.

Dietary deficiencies or imbalances may also play an etiological role in head & neck cancers estimated to be as high as 10-15% of cases. However, the evidence relating to certain dietary components and the risk of cancer is inconsistent.Micronutrient deficiencies seem to be associated with increased risk.Evidence suggesting that a diet high in vegetables (Particularly rich in carotenes) and fruits probably decreases the risk. In our study 28% of patients had dietary deficiencies, as in our population there is more consumption of meat and less consumption of fruits and vegetables. This indicates that lack of balanced diet plays a significant role in the development of Head and Neck Cancers in our population

Clinicians have long noticed an association between poor oral hygiene, poor dental status and oral cancer.Some studies indicate that the poor oral hygiene may act synergistically with some other risk factors.In our study 50% of patients had poor orodental hygiene out of which 33% of patients had cancers of oral cavity. This shows that poor orodental hygiene plays a vital role in the development of oral cancers in our population.

It is common knowledge that inequalities in health status reflect social inequalities in society. Head and Neck Cancers are predominant in people belonging to lower socio-economic status as they lack health awareness and are exposed to more risk factors.In our study 57% of patients belonged to low socio-economic status implying that in our population this group is at increased risk of developing Head and Neck Cancers.[11]

V. Conclusion

A male preponderance was noted in our population and mostly patients were more than 40 years of age at presentation. Unhealthy lifestyle which includes tobacco consumption, lack of balanced diet and poor orodental hygiene play significant role in the development of head and neck cancers. Good education and lifestyle modification can greatly help in reducing the burden of these malignancies in our population.

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Dr. Arun Kumar.et.al. "A Prospective Epidemiological Profile of Head and Neck Cancers in a Tertiary Care Hospital."*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(1), 2020, pp. 45-51.