

PREVALENCE OF HEAD AND NECK AND ORAL CANCER: A RETROSPECTIVE STUDY

¹Dr. Mamit Kumar, ²Dr. Sanjay Talnia, ³*Dr. Monica Malik, ⁴Dr. Manu Gupta, ⁵Dr. Prashansa Sharma, ⁶Dr. Amit Kumar

¹MDS, Senior Lecturer, Dept. Of Oral and Maxillofacial Surgery, MM College of Dental Sciences and Research, Ambala.

²MDS, Senior Lecturer, Dept. Of Oral and Maxillofacial Surgery, Swami Devi Dyaal Dental College and Hospital, Golpura

³Dental Surgeon (Prosthodontist and Oral Implantologist), Govt. of Haryana, Civil Hospital Jagadhari, Haryana

⁴MDS, Oral and Maxillofacial Surgery.

⁵MDS, Senior Lecturer, Dept. Of Periodontology and Oral Implantology, I.T.S College of Dental Science and Research, Muradnagar, Ghaziabad.

⁶BDS, Govt. Dental College, Srinagar

*Corresponding Author: Dr Monica Malik

Dental Surgeon (Prosthodontist and Oral Implantologist), Govt. of Haryana, Civil Hospital Jagadhari, Haryana4MDS, Oral and Maxillofacial Surgery.

Article Received on 23/06/2019

Article Revised on 14/07/2019

Article Accepted on 04/08/2019

ABSTRACT

Aims: To assess the prevalence of head & neck and oral cancer in India. **Materials and Methods:** A retrospective study on the prevalence of various cancers in the head & neck and oral cavity regions was conducted in the Department of oncology from 1st August 2016 to 31st July 2018. **Results:** A total of 4,587 Total Body Malignancy (TBM) cases were reported for the Out-Patient Department records, among which head & neck (HNC) and oral cancers constituted 1,476 cases (32.18%). There were 640 (43.36%) and 836 (56.64%) HNC and oral cancer cases, respectively. **Conclusion:** This study attempts to quantify and analyse the spectrum of HNC and oral cancers in the region. A comprehensive effort is needed to identify the cause of such high prevalence, generate awareness and treatment options suited to meet this challenge.

KEYWORDS: HNC, oral cancer, TBM, prevalence.

INTRODUCTION

In the present-day scenario world is heading towards modern day epidemics. Among these modern epidemics cancer is the second most common cause of death in developed countries.^[1] Among various cancers, head and neck cancers in India are emerging as major public health problem. Head and neck cancer is described as cancer of tonsil, pharynx, nasal cavity, salivary gland, hypopharynx, larynx and other. Oral cancer refers to cancer of lip, tongue, gingivae, floor of the mouth, palate (hard and soft), maxilla and cheek.^[2,3] The prevalence of head and neck cancer (HNC) with respect to total body malignancy (TBM) varies from 9.8 to 40%. Its frequency is high in Asia and other less developed countries and these countries account for nearly 0.7% million new HNC every year. In India, HNC account for 20 to 40% total body malignancy with oral malignancy (9.4%) observed as the most common site by Indian registries.^[4] It is the sixth common cause of death in males and seventh in females.^[5]

HNCs are strongly associated with certain environmental and lifestyle risk factors, such as tobacco consumption,

alcohol, poor nutrition and ultraviolet light exposure.^[4] Tobacco is commonly used in the forms of chewing and smoking so considered as one of the most common cause of oral cancer. According to the World Health Organization, cancer has been growing at a rate of 11% annually in India due to wide spread tobacco consumption.^[1] Sankaranarayanan et al.^[6] reported a significantly increased risk of cancers of the tongue and the floor of the mouth in association with pan tobacco chewing, bidi smoking and bidi plus cigarette smoking but not with cigarette smoking alone. They also found an association with alcohol drinking.

The alarming increase in the prevalence of the HNC in South East Asia especially in India has prompted us to undertake this retrospective study. This study, therefore, will attempt to quantify the prevalence of HNC in the region which will help the health professionals to understand the burden of HNC in the region, and to generate strategies for future planning.

METHODS

This is a retrospective study on the prevalence of HNC and oral cancer in the Department of Oncology from 1st August 2016 to 31st July 2018. The ethical clearance was obtained from the ethical committee of the Institute before commencing the study.

A total of 4587 TBM cases were obtained from the OPD registered during the time periods (1st August 2013 to 31st July 2014) among which HNC and oral cancer constitute 1705 cases. Patients diagnosed in OPD and confirmed by histopathological evaluation were included in the study. Among these 1705 patients, only 1476 had histopathological confirmation and hence were considered for the present study. Data was analyzed using IBM.SPSS. Statistics (version 20). The statistical significance was determined by the Chi-square test, and level of significance was set at $P < 0.05$.

RESULTS

A total of 4587 TBM cases were reported for the outpatient department records, among whom HNC and oral cancer constitute 1476 cases (32.18%). There were 640 (43.36%) and 836 (56.64%) HNC and oral cancer cases respectively.

Tonsil was the most prevalent cancer site constituting 404 (27.37%), followed by tongue 284 (19.24%). The least common site was gingiva constituting 15 (1.02%), followed by mandible 25 (1.42%). Highest reported cancer patients belong to 50-59 years of age group while

least reported prevalent age group was ≥ 70 years constituting 405 (27.44%) and 109 (7.38%) cases respectively (table 1).

While analysing the prevalence of oral cancer and HNC cancer location wise, it was found that oral cancer and HNC cancer was most prevalent in centre zone (31.82%) and west zone (24.69%) of Rajasthan state respectively. Both types of cancer cases were found least in east zone constituting 3.83% and 7.03% respectively (table 2). There was statistical significant difference reported when oral cancer and HNC cancer were tested with location ($p < 0.05$).

Altered taste was the most common symptom observed in both oral cancer (30.14%) and HNC cancer (29.69%). The least common symptom observed in types of cancer cases were dysphagia i.e. 11.72% and 10.63% respectively (table 3).

There were 1223 (83.75%) male patients and 253 (16.25%) female patients. The most prevalent age group for oral cancer was <40 years whereas for HNC cancer it was 50-59 years accounting for 26.56% and 32.19% respectively. Prevalence of oral cancer and HNC cancer was found to be least in ≥ 70 years participants with 6.34% and 8.75% respectively (table 4). There was statistical significant difference reported when oral cancer and HNC were tested with age, where else no such difference was reported for gender.

Table 1: Distribution of HNC and oral cancer in relation to anatomical sites of according to different age groups of cancer cases.

Anatomical Sites of Oral Cancer and HNC	Age groups (years)					N	%
	<40	40-49	50-59	60-69	≥ 70		
Lip	31	30	56	64	18	199	13.48
Tongue	68	66	73	57	20	284	19.24
Gingiva	4	2	6	2	1	15	1.02
Floor of mouth	12	6	8	8	0	34	2.30
Palate	6	9	9	6	3	33	2.24
Maxilla	6	8	2	6	1	23	1.56
Mandible	5	4	5	7	0	21	1.42
Cheek	84	48	34	29	7	202	13.69
Nasal cavity	6	6	6	4	3	25	1.69
Tonsil	61	87	127	90	39	404	27.37
Oropharynx	8	13	22	21	5	69	4.67
Hypopharynx	8	5	21	19	4	57	3.86
Larynx	16	16	36	34	8	110	7.45
Total	316	300	405	346	109	1476	100

Table 2: HNC and oral cancer cases in relation to zones.

Zones	Oral cancer		HNC		Total N	χ^2	p value
	N	%	N	%			
North	118	14.11	104	16.25	222	52.40	<0.00001
South	92	11.00	134	20.94	226		
East	32	3.83	45	7.03	77		
West	213	25.48	158	24.69	371		
Centre	266	31.82	129	20.16	395		
Others	115	13.76	70	10.94	185		
Total	836	100	640	100	1476		

Table 3: Distribution of HNC and oral cancer cases according to the symptoms reported.

Symptoms	Oral cancer		Head & neck cancer		Total	χ^2	p value
	N	%	N	%	N		
Altered taste	252	30.14	190	29.69	442	3.50	0.48
Pain	228	27.27	173	27.03	401		
Dysphagia	98	11.72	68	10.63	166		
Trismus	110	13.16	104	16.41	214		
Sore	148	17.70	105	16.25	253		
Total	836	100	640	100	1476		

Table 4: HNC and oral cancer distribution according to age group and gender.

Age groups (years)	Oral cancer		HNC		Total	χ^2	p value
	N	%	N	%	N		
<40	222	26.56	93	14.53	315	40.52	<0.00001
40-49	179	21.41	121	18.91	300		
50-59	199	23.80	206	32.19	405		
60-69	183	21.89	164	25.63	347		
≥ 70	53	6.34	56	8.75	109		
Total	836	100	640	100	1476		
Gender						0.63	0.43
Male	687	82.18	536	83.75	1223		
Female	149	17.82	104	16.25	253		
Total	836	100	640	100	1476		

DISCUSSION

The prevalence of HNC and oral cancer cases reported in the present study is 32.18% which is towards the higher end according to the range of 10-40% being reported by other studies.^[7,8,9,10,11] The higher prevalence of the disease in India (54.48%) is being reported by Abhinandan Bhattacharjee^[5] *et al* in the north eastern states. This difference according to authors indicates several factors that predispose HNC and oral cancer. The use of tobacco, lime, betel and smoking is a very common oral habit prevalent in this region which may be one of the prominent causes.

Oropharynx has been reported as the most prevalent HNC cancer type by various studies^[5,12], but to a contrary the results of the present study shows no such trend and it accounts for only 4.67% which is similar to research done by Shinde *et al*^[13] in which oropharynx constitutes 3.66% of TBM. According to the D'Souza *et al*^[14], reason for such a trend could be fewer patients reported with human papilloma virus (HPV) as research have proven a correlation between HPV and oropharyngeal cancer. In the present study tonsil (27.37%) is the most common site which is similar to the research done by Caroline H. Shiboski^[15] (30.01%) but in contrary to study done by Sharma *et al*^[16], tonsil constitutes only 4.2%. Hypopharynx accounts for 3.86% of the cases in the present study which is near to the results of study done by Shunyu *et al*^[4] (2.31%) but in other studies^[17,18,19,20], it accounts for 11.7 to 28.3% of the cases. Laryngeal cancer cases comprising 7.45% of the total cases which is somewhat similar with study done by Caroline H. Shiboski^[15] (5%) while in relation to

other research^[18,19,21]; it ranges from 11 to 26% of the cases.

Earlier studies^[7,18,19,22] had shown that oral cancer accounts for 24 to 28% of the cases whereas in the present study oral cancer accounts for 56.64% cases which is somewhat similar with study done by Shinde *et al*^[13] which reported 41.28% cases. Tongue was the most effected oral site as stated by other studies^[5,10,13], which is parallel with the present study, but in a study done by Neizekhotuo Brian Shunyu *et al*^[4] and Yasim Bhurgi *et al*^[23] the pattern was not the same. Buccal mucosa (cheek) was the second most common oral site according to various studies^[4,13] which is similar with the present study but in contrary buccal mucosa was the most common oral site as studied by Yasim Bhurgi *et al*^[23], this pattern could be due to the consumption of smokeless tobacco form which is prevalent in the this part of the country.

In relation to various studies^[5,18,19], the commonest age group was 6th decade comprising 30% to 40% of the overall cases whereas in the present study 5th decade is the commonest age group comprising of 405 cases (27.44%) which is similar to a study conducted in Pakistan by Yasim Bhurgi *et al*.^[23] In the current study, the most prevalent age group for oral cancer is <40 years whereas for HNC it is 50-59 years accounting for 26.56% and 32.19% respectively. When the gender distribution is calculated it is found that, male to female ratio is 4.83:1 which is somewhat in the range of study done by Abhinandan Bhattacharjee *et al*^[5] (3:1) while in other studies this ratio is 1.5:1 to 2.1:1.^[17,18,19,21]

Francis Balduino Guimaraes Santos *et al*^[24] stated that pain was the most prevalent general symptom affecting 71.5% of the patients while in the present study altered taste was the most prevalent general symptom affecting 29.95% of the patients followed by pain (27.17%).

According to the authors the major shortcoming of the study was that information was collected retrospectively, thus being subject to inherent inaccuracies, including the inability to control bias and cofounders, although according to authors the sample size generated in the present study with one year data could have not been generated by any other study design. The other disadvantages are that it relies on accuracy of written record, may be impossible to access important information (restricted by institutional regulations) and difficult to establish cause and effect. The rising prevalence of HNC and oral cancer in the Rajasthan state is alarming. With many cancers are difficult to manage, but being highly preventable, the emphasis, therefore should be on preventing the onset and detecting the disease at an early stage. The most important conclusion, that when the symptoms become noticeable to patients, they are already indication of an abnormality, in fact already foreshadowing advanced disease, suggesting rapid evolution of early disease stage to more advanced stages. Over and above, lack of awareness about cancer has made the scenario even worse. This study quantifies and analyse the spectrum of the prevalence of HNC and oral cancer in the region. A comprehensive effort is needed to identify the cause of increasing prevalence, generate awareness and treatment options suited to meet this challenge.

REFERENCES

- Mishra A, Khandelwal A, Kanungo M, Pradhan P, Gupta P. Prevalence of oral cancer in Chhattisgarh-An epidemiological study. *Chhattisgarh Journal of Health Sciences*. 2013; 1(1): 1-4.
- MacCarthy D, Flint SR, Healy C, Stassen L. Oral and neck examination for early detection of oral cancer - a practical guide. *J Ir Dent Assoc*. 2011; 57(4): 195-199.
- Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin LH, Parkin MD. International classification of diseases for oncology (ICD-O). 3rd ed. Geneva: World Health Organization, 2000.
- Shunyu NB, Syiemlieh J. Prevalence of Head and Neck Cancer in the State of Meghalaya: Hospital-based Study. *Int J Head Neck Surg*, 2013; 4(1): 1-5.
- Bhattacharjee A, Chakraborty A, Purkaystha P. Prevalence of head and neck cancers in the North East - An institutional study. *Indian J Otolaryngol Head Neck Surg*. 2006; 58 (1): 15-19.
- Sankaranarayanan R, Duffy SW, Padmakumary G, Day NE, Padmanabhan TK. Tobacco chewing, alcohol and nasal snuff in cancer of the gingiva in Kerala, India. *Br. J. Cancer*, 1989; 60: 638-643.
- Gangadharan P. Epidemiologic observation on cancer in Indian people. *Indian J Cancer*, 1979; 16: 1-17.
- Winn D. Smokeless tobacco and aerodigestive tract cancers: Recent research directions. *Adv Exp Med Biol.*, 1992; 320: 39-46.
- Murata M, Takayama K, Choi B, Pak A. A nested case-control study on alcohol drinking, tobacco smoking and cancer. *Cancer Detect Prev*, 1996; 20(6): 557-65.
- Singh NP, Sachan MS, Budhiaraj N. Anaesthetic problems in excisional surgery for malignant lesions of oral cavity and maxillary antrum. *Indian J Cancer*, 1965; 2(3): 135-42.
- Shaw HJ. Glottic cancer of the larynx, 1947-1956. *J Laryngol Otol*. 1965; 79:1-14.
- Bhatia PL, Jha BK. Pattern of head and neck cancers in Manipur. *Indian J Cancer*, 1982; 19: 241-8.
- Shinde JK, Dr. Hashmi SIH. Retrospective study of malignant lesions of head & neck in rural area of Ahmednagar district. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 2013; 4(2): 12-19.
- D'Souza G, Kreimer A, Viscidi R, Pawlita M, Fakhry C, Koch W. Case-control study of human papilloma virus and oropharyngeal cancer. *N Eng J Med.*, 2007; 356(19): 1944-56.
- Caroline H. Shiboski, Brian L. Schmidt, Richard C. K. Jordan. Trends in ca of the tongue and tonsils. *Cancer*, 2005; 103(9): 1843-49.
- Sharma J, Katak A, Vijay C.R. Population-based incidence and patterns of cancer in Kamrup urban cancer registry, India. *Natl Med J India*, 2013; 26(3): 133-41.
- Chaturvedi VN, Raizada RM, Jain SK, Tyagi NK. Cancer of ear, nose, pharynx, larynx and esophagus in a rural hospital. *J Vivekananda Inst Med Sci.*, 1987; 10: 63-67.
- Manjari M, Popli R, Paul S, Gupta VP, Kaholon SK. Prevalence of oral cavity, pharynx, larynx, nasal cavity malignancies in Amritsar, Punjab. *Indian J Otolaryngol Head Neck Surg*, 1996; 48: 189-96.
- Thakur S, Chaturvedi V, Singh AK, Puttewar MP, Raizada RM. Pattern of ear, nose, pharynx, larynx and esophagus (ENPLO) cancers in rural-based hospital. *Indian J Otolaryngol Head Neck Surg*, 2001; 53: 93-99.
- Chakravarty S, Kar TK, Ghosh LM. Neoplasm of ear, nose, throat. *Indian J Otolaryngol Head Neck Surg*, 1992; 1: 113-18.
- Jussawalla DJ, Sathe PV, Yeole BB, Natekar MV. Cancer incidence in Aurangabad city 1978-80. *Indian J Cancer*, 1984; 21: 55-62.
- Kulkarni PV, Jaiswal SS, Rathod SB, Khaliq A, Kulkarni RR. Profile of malignancy at Ambajogai (15 years retrospective study). *Indian J Cancer*, 1996; 33: 31-36.
- Bhurgri Y, Bhurgri A, Hassan SH, Zaidi SH, Rahim A, Sankaranarayanan R, Parkin DM. Cancer incidence in Karachi, Pakistan: first results from

- Karachi Cancer Registry. *Int J Cancer*, 2000; 85: 325–9.
24. Santos FBG, Raposo JJBV, Figueiredo MCT. Correlation between symptoms and course duration of upper aerodigestive tract cancer at early and advanced stages. *Braz J Otorhinolaryngol*, 2013; 79(6): 673-80.