

## Head and Neck Cancer

# Trend of Head and Neck Cancers in a National Tertiary Cancer Hospital of Nepal from 2012 to 2017

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## Abstract



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## Keywords

- ▶ head and neck cancers
- ▶ trend
- ▶ Nepal

**Introduction** Head and neck cancers (HNCs) are increasing in Nepal and have become a major public health issue. This study aims to describe the trend of HNCs in a national tertiary cancer hospital in Nepal.

**Methods** This was a cross-sectional study with secondary data analysis conducted at B.P Koirala Memorial Hospital, Chitwan, Nepal. The data were obtained from the medical record section and included all new HNC cases registered from 2012 to 2017. Analysis was done using Statistical Package for Social Sciences version 17. Subgroup analysis was done according to age, gender, site, and year.

**Results** A total of 4,582 new HNCs were registered, of which 3,097 (67.6%) were males and 1,482 (32.4%) were females. Lip and oral cavity cancers (46.5%) were the most common HNCs followed by tonsil and pharynx (18.0%) and larynx (15.8%). The trend of HNCs shows a steady rise in incidence with difference according to the sites. HNCs were more common among males than females except for thyroid cancer. The most common age group was 60 to 74 years.

**Conclusions** The trend of HNCs is increasing in Nepal especially oral cancers. Awareness of risk factors, effective screening programs, and comprehensive treatment should be focused to decrease the burden of HNCs.

## Introduction

Cancer is a major public health problem in the world. It is one of the leading causes of death in Nepal.<sup>1</sup> It is estimated that there were 26,184 new cancer cases in Nepal in 2018 with age-standardized incidence rate of 103.7 per 100,000 population.<sup>2</sup> Further, it is estimated that the global incidence of new cancer cases will rise from 18.1 million cases

in 2018 to 29.5 million by 2040.<sup>3,4</sup> Head and neck cancers (HNCs) are the sixth most common cancer worldwide and are defined as a heterogeneous group of malignant tumors of the airways and upper digestive system.<sup>5</sup> These include malignancies of the oral cavity, nose, pharynx, larynx, paranasal sinuses, salivary glands, and thyroid. HNCs are a major issue in developing countries like ours, mainly due to the widespread use of tobacco and alcohol consumption.<sup>6,7</sup> Usually,

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they are presented in the later stage in Nepal.<sup>8,9</sup> The other risk factors are infection with human papilloma virus (HPV), poor oral hygiene, and poor diet.<sup>5</sup> However, the risk factors for thyroid cancers differ and commonly occur in females and include radiation exposure, a diet low in iodine, and hormonal factors.<sup>10</sup>

It is important to know the trend of cancer over time for the effective planning and implementation of public health action and comprehensive management of cancer. Hence, the present study aims to describe the trend in distribution and incidence of HNCs by age, sex, and site in B.P Koirala Memorial Cancer Hospital (BPKMCH).

## Methods

This was a cross-sectional study performed based on existing data, obtained from the medical record database of BPKMCH. BPKMCH is centrally located in Nepal at Bharatpur Metropolitan City of Chitwan District. It is the largest national tertiary cancer hospital, which receives majority of cancer patients from all over Nepal. This study included new HNC cases registered from 2012 to 2017. All patients diagnosed with HNCs were identified using site-specific International Classification of Diseases 10th version codes. Sites of HNCs reviewed in this study included: lip and oral cavity (C00–06), major salivary glands (C07, 08), tonsil and pharynx (C09–14), nasal cavity and paranasal sinus (C30, 31), larynx (C32), and thyroid gland (C73). The data were retrieved in Microsoft Excel 2013, duplicates removed, and analyzed in Statistical Package for Social Sciences (SPSS) version 17. The number and percentage of cases were examined by gender, age, and tumor location. Male-to-female ratios were also calculated by different HNC sites. The trends of incidence of HNC by sites and year were demonstrated by line diagrams. Permission to use the data for this study was taken from the Research Committee of BPKMCH.

## Results

A total of 27,908 new cancer cases were registered in BPKMCH from 2012 to 2017, out of which 45% were males and 55% were females. Similarly, 4,582 (16.4%) of the total cases were

HNCs, of which 3,097 (67.6%) were males and 1,482 (32.4%) were females. Lip and oral cavity cancers (46.5%) were the most common HNCs followed by tonsil and pharynx (18.0%), larynx (15.8%), thyroid (10%), nasal cavity and paranasal sinuses (5.7%), and major salivary glands (4.1%). Among the total cancer cases, the male–female ratio was found to be 0.82 with females having a higher proportion (55.0%). In contrast, HNCs were more common among men with a male-to-female ratio of 2.09. The male-to-female ratio was different according to sites of HNCs. The ratio was found to be more than 1 in all sites except for thyroid cancer. This depicts that all cancers of the head and neck region were more common among the males except for thyroid cancer. The highest ratio was found in tonsil and pharynx of 2.91 followed by lip and oral cavity of 2.80, and larynx of 2.65. Thyroid cancer was found to be more common among females (69.8%) with a male-to-female ratio of 0.43 (→ Table 1).

Cancer cases were found to be more common in the age group of 45 to 59 years (32.6%), 60 to 74 years (31.1%), followed by 30 to 44 years (18.4%). However, HNCs were common in the old age group of 60 to 74 years (37.0%), followed by 45 to 59 years (32.7%) and 30 to 44 years (16.3). Similar results were observed in different sites of HNCs according to age distribution (→ Table 2).

The trends of HNCs according to the site are shown in → Figs. 1 to 7. The trends looked different for different sites. Male cases were more in each year than the female cases, and this was true according to the sites also, except for the thyroid cancer. The total HNC cases increased in the year 2013, then decreased in 2014, then the number rose steadily in each consecutive year. The trend was similar for males and females separately (→ Fig. 1).

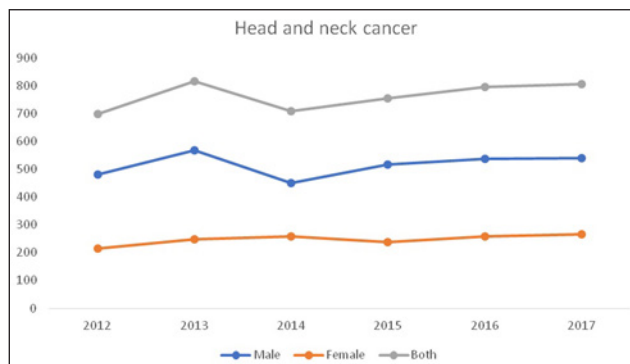
Similarly, in lip and oral cancer cases, the number decreased in 2014 and there was a sharp rise in the number in 2015 and 2016. However, for female cases, the trend looked almost steady (→ Fig. 2).

The trend for salivary gland is that there was a sharp rise in the number of the cases in 2013, then a decrease in the number of cases each year (→ Fig. 3). A similar trend was observed for tonsil and pharynx cancers with a slight increase in the number of cases in 2017 (→ Fig. 4).

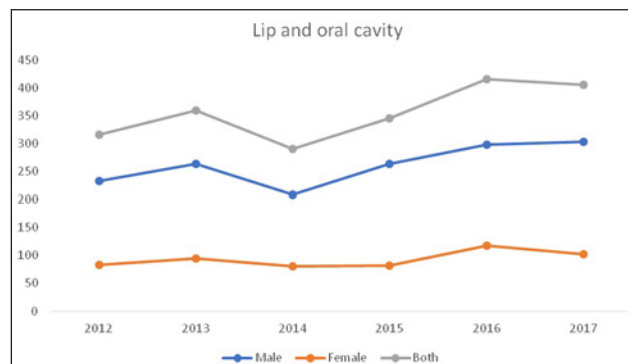
**Table 1** Distribution of head and neck cancers by site and gender in a national tertiary cancer hospital of Nepal during 2012 to 2017

Sites	Male		Female		Total		Male/ Female
	n	%	n	%	n	%	
Lip and oral cavity	1,571	73.7	561	26.3	2,132	46.5	2.80
Major salivary glands	107	57.5	79	42.5	186	4.1	1.35
Tonsil and pharynx	613	74.4	211	25.6	824	18.0	2.91
Nasal cavity and PNS	143	55.2	116	44.8	259	5.7	1.23
Larynx	527	72.8	199	27.5	724	15.8	2.65
Thyroid gland	136	29.8	319	69.8	457	10.0	0.43
Total HNC cases	3,097	67.6	1,485	32.4	4,582	100.0	2.09
Total cancer cases	12,555	45.0	15,353	55.0	27,908	100.0	0.82

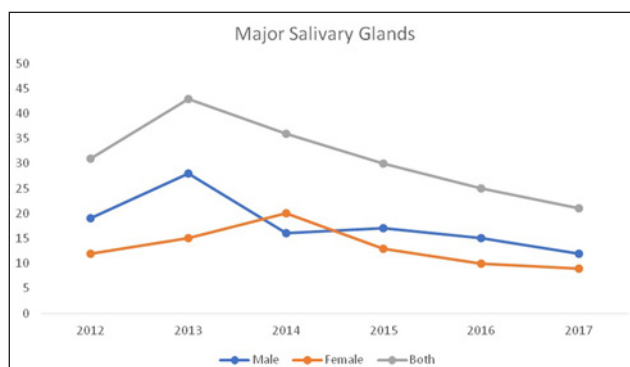
Abbreviations: HNC, head and neck cancer; PNS, paranasal sinus.



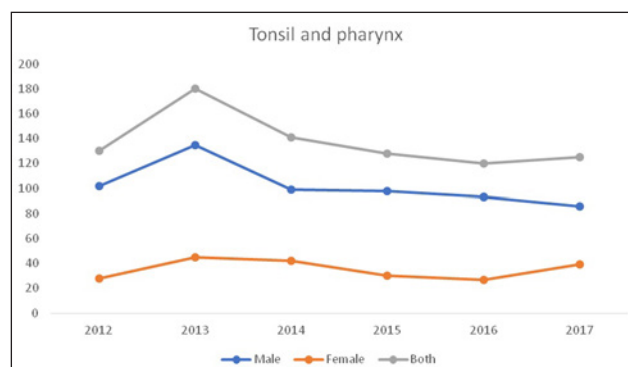
**Fig. 1** The trend of head and neck cancers in a national tertiary cancer hospital of Nepal during 2012 to 2017.



**Fig. 2** The trend of cancers of lip and oral cavity in a national tertiary cancer hospital of Nepal during 2012 to 2017.



**Fig. 3** The trend of cancers of major salivary glands in a national tertiary cancer hospital of Nepal during 2012 to 2017.



**Fig. 4** The trend of cancers of tonsil and pharynx in a national tertiary cancer hospital of Nepal during 2012 to 2017.

**Table 2** Distribution of head and neck cancers by site and age in a national tertiary cancer hospital of Nepal during 2012 to 2017

Sites	0–14 y		15–29 y		30–44 y		45–59 y		60–74 y		≥75 y	
	n	%	n	%	n	%	n	%	n	%	n	%
Lip and oral cavity	17	0.8	57	2.7	405	19.0	757	35.5	773	36.3	123	5.8
Major salivary glands	12	6.5	18	9.7	32	17.2	56	30.1	52	28.0	16	8.6
Tonsil and pharynx	19	2.3	63	7.6	102	12.4	247	30.0	319	38.7	74	9.0
Nasal cavity and PNS	5	1.9	21	8.1	44	17.0	81	31.3	88	34.0	20	7.7
Larynx	3	0.4	4	0.6	37	5.1	247	34.1	353	48.7	80	11.0
Thyroid gland	14	3.1	82	18.0	128	28.1	112	24.6	110	24.1	11	2.4
Total HNC cases	70	1.5	245	5.3	748	16.3	1,500	32.7	1,695	37.0	324	7.1
Total cancer cases	1,289	4.6	2,053	7.4	5,143	18.4	9,091	32.6	8,686	31.1	1,646	5.9

Abbreviations: HNC, head and neck cancer; PNS, paranasal sinus.

There was a sharp rise in the cancers of nasal cavity and paranasal sinus (PNS) in 2013 and 2014 and an increase and a decrease in the consecutive years with the highest in the year 2016 (►Fig. 5).

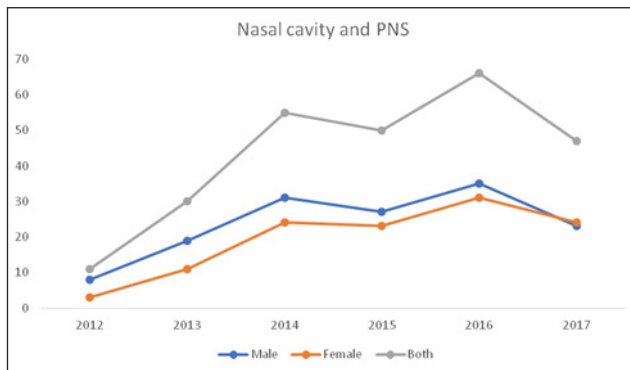
Laryngeal cancer in male cases looked steady with a slight decrease in 2014 and 2016. But the number was increased in the case of females till 2015 and a decrease in number was observed in 2016, then again an increase in 2017 (►Fig. 6).

In contrast to other sites, thyroid cancer was observed more in females than in males each year. In total thyroid

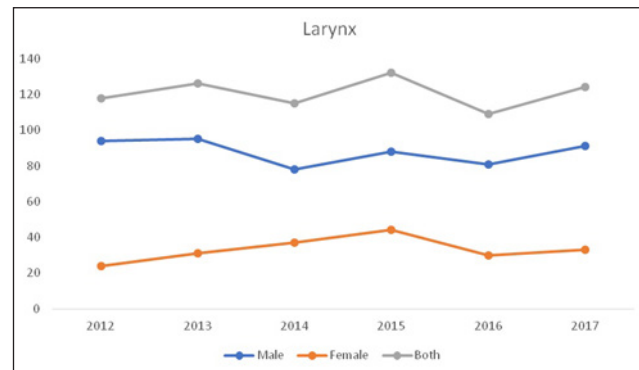
cancer, there was a decrease in the number of cases each year till 2016 and an increase in 2017. However, for the trend in cases of males and females separately, there was up and down in the number of cases by year (►Fig. 7).

## Discussion

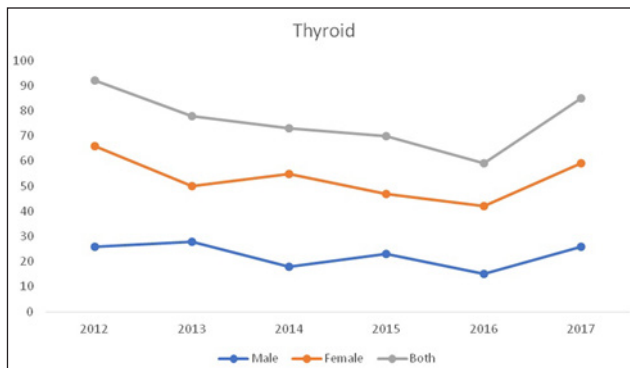
Our data illustrate that there is a slight increase in the incidence of overall HNCs from 2012 to 2017. Our data also showed that the incidence of all HNCs for men is more than



**Fig. 5** The trend of cancers of nasal cavity and paranasal sinuses in a national tertiary cancer hospital of Nepal during 2012 to 2017.



**Fig. 6** The trend of laryngeal cancers in a national tertiary cancer hospital of Nepal during 2012 to 2017.



**Fig. 7** The trend of thyroid cancers in a national tertiary cancer hospital of Nepal during 2012 to 2017.

that of women (male-to-female ratio: 1.23–2.91), except for thyroid cancer. This finding was similar to the findings of many other studies.<sup>11–13</sup> It is a well-known fact that thyroid cancer is more common among women due to hormonal influence.<sup>10</sup> Greater incidence of HNCs in Nepalese men can be due to the higher proportion of smokers among men than women (27.0 vs. 10.3%) and also higher proportion of smokeless tobacco use (men 31.3% and women 4.8%).<sup>14</sup> Alcohol use is also another risk factor for HNCs. In Nepal, 28% of men and 7.1% of women are current alcohol drinkers.<sup>14</sup> Alcohol and tobacco are consumed together in many parts of the country. This behavior acts synergistically as a risk for HNC.<sup>15,16</sup> In addition to tobacco and alcohol, areca nut is widely consumed in Nepal mainly in the Terai region. Areca nut with or without tobacco is an established carcinogen and may result in oral submucosal fibrosis, a potentially premalignant condition and oral cancer.<sup>6</sup> The role of HPV in the incidence of HNCs is not known exactly in Nepal. However, it is an established risk factor for HNCs. Unfortunately, HPV vaccination is not available in the national immunization program of the country. Another risk factor is poor oral hygiene; however, a nationally representative survey reported good oral hygiene in Nepal.

This study also showed that a huge proportion of cancer incidences is occupied by HNCs and oral cancer comprises a major proportion of the HNCs. Oral cancer can be easily screened and should have special consideration.<sup>17,18</sup> There is an ongoing community-based screening of high-risk

individuals for oral cancers in a different part of the country by BPKMCH.<sup>19</sup> Although cancers arising from the nasal cavity and PNS are a rare entity, this study has shown a sharp rise in the incidence, which needs further evaluation.

Efforts should be made to reduce the burden of HNCs in Nepal. These involve raising awareness, screening, HPV vaccination, and proper implementation of tobacco and alcohol control policies along with encouraging health-seeking behavior to facilitate early diagnosis and treatment.<sup>20</sup>

The limitation of this study is that it cannot be generalized, as it includes only one hospital; however, BPKMCH is the largest comprehensive national cancer hospital in Nepal where the majority of the cancer cases from all over the country are diagnosed and treated.

## Conclusions

The incidence of HNCs is increasing in Nepal with variation in trend by anatomical site and over time, with differences by sex. Among different types of HNCs, oral, nasal, and PNS cancers have shown the most rapid rise. Cancer in males is higher than in females for all types of HNCs, especially for cancer of the oral cavity, tonsil, and pharynx and larynx. Awareness and screening programs along with HPV vaccination should be implemented in the country with clear implications for public health action and service provision in Nepal.

## Conflict of Interest

None declared.

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