

# Clinico-histopathological Survey of Head and Neck Cancer at Tertiary Health Care Centre -Dhulikhel Hospital

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## ABSTRACT

### Background

Head and neck is one of the most prevalent site for cancers along with lungs, cervix, breast and stomach. Hospital based cancer registries required for effective evaluation of diagnosis and management of cancer is inadequate in Nepal. Cancer registry system established by WHO is acquired by seven major hospitals in our country. However, data from tertiary health care centres like ours remain undocumented.

### Objective

The objective of this study is to perform retrospective analysis of clinico-histopathological types of head and neck lesions which were eventually diagnosed as cancer in Dhulikel Hospital, a tertiary health care centre of Central East Nepal.

### Method

Data regarding head and neck lesions diagnosed as cancer (January 2001- December 2014) were extracted from the archives of Department of General Pathology. These cases were categorised according to demographic profile, site of cancer and histological diagnosis.

### Result

A total of 240 cases matched the inclusion criteria and were selected for this study. Male: Female ratio of 1.3:1 with a mean age of 52 years (52.82±1.8) was found. Two hundred and two (84.16%) patients were diagnosed with carcinoma, 31 (15%) with lymphoma, 3 (1.25%) with melanoma, 2(0.83%) with small round cell tumor and 2 (0.83%) with sarcoma. The most common histological types of carcinoma seen were Squamous cell carcinoma (138 cases; 57.5%) followed by papillary carcinoma (26 cases; 10.8%). Among the lymphomas Non-Hodgkin's lymphoma (21 cases; 8.75%) was the most predominant type. The most common site of presentation was oral cavity (60 cases; 25%) followed by skin (36 cases; 15%), thyroid (32 cases; 13.33%) and oesophagus (27 cases; 11.25%). Metastasis to cervical lymph node was found in 39 cases (16.25%).

### Conclusion

Based on these finding, it was observed that Squamous cell carcinoma was the most common type followed by different epithelial and mesenchymal malignancies in head and neck region. The results revealed by this study will provide useful information for planning the health care policies about cancer in Nepal and will be more effective and helpful to the patients of remote areas.

## KEY WORDS

*Carcinoma, clinico-histopathological, head and neck region, lymphoma, Nepal, sarcoma*

## INTRODUCTION

Head and neck cancer ranks sixth among all types of cancer in the world and is one of the leading cause of death in developing countries including India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Bhutan, Nepal, Iran and Maldives.<sup>1,2</sup> Head and neck cancer affects upper aero digestive tract, paranasal sinuses and the salivary glands.<sup>3</sup> The epidemiological data have been analysed to some extent to determine the cause of such high prevalence of head and neck cancer in these countries but lack of basic research infrastructure acts as a hindrance to achieve a satisfactory conclusion.<sup>4</sup> Because of the same reason, population based cancer registries may not provide a comprehensive data for the prevalence of cancer in these low income countries.<sup>5</sup> Nepal is one such low income country situated in South Asia. Its land surface area is 147,180 sq.km with a population of 28.17 million and annual population growth of 1.21%.<sup>6</sup> Nepal ranks 157 out of 187 countries with Human Development Index value of 0.463.<sup>7</sup> Cancer is a well-known non communicable disease which contribute to 7% of major health burden. WHO has estimated 50,000-70,000 new cases of cancer diagnosed annually in Nepal.<sup>8</sup> Globocan project of WHO agency which is responsible for determining cancer trends globally, has estimated 27,768 cancer cases in Nepal in the year 2012.<sup>9</sup> According to the demographic profile of Nepal cancer registry system, lung cancer has been found to be the most common cancer followed by cancer of oral cavity and stomach in males while most common cancer in females is of cervix/ uteri, breast and lungs.<sup>8,10</sup> Various risk factors has been identified for such a higher incidence of cancer which include smoking followed by illiteracy, lack of awareness, poor hygiene and low economic status. It is further adding to burden of Nepal public health care because of lack of awareness program, ignorance about the disease, consideration of the disease as incurable and high cost of cancer treatment.<sup>11</sup>

Nepal cancer registry system was updated by WHO in year 2005 which acquired data from seven major hospital in various parts of Nepal namely, BP Koirala Cancer Hospital in Bharatpur; Bir Hospital, Institute of Medicine and Teaching Hospital, Kanti Children Hospital and Bhaktapur Cancer Hospital in Kathmandu; BP Koirala Institute of Health Sciences in Dharan and Manipal Teaching Hospital in Pokhara.<sup>12</sup> Even though this was a great breakthrough in history of oncology in Nepal, but it still does not reflect the cancer prevalence of the entire country since the data from the tertiary health care centres still remains undocumented. One such tertiary health care centre is Dhulikel Hospital located in Central East Nepal with 18 peripheral satellite centres in various districts of Nepal, and so represents a large databank of head and neck cancers. Hence, we conducted this clinico-histopathological retrospective case series analysis with an intention to contribute it to cancer registry system of Nepal and with a hope to make it more effective in remote areas of our country.

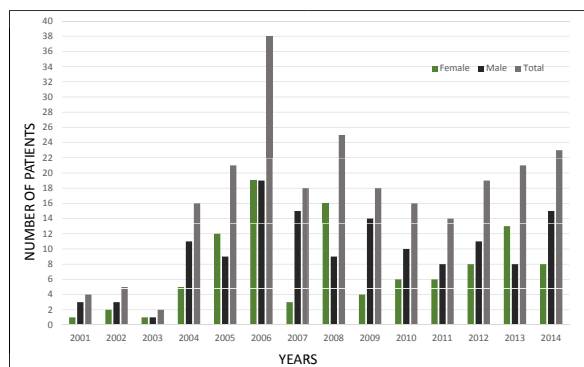
We conducted this study with the objective to evaluate: 1) Documentation of number of head and neck cancer cases diagnosed in Department of General Pathology of Dhulikhel Hospital. 2) Clinico-histopathological variations among these cancer cases,

## METHODS

The present clinico-histopathological survey was performed at Department of Pathology of Dhulikhel Hospital. This 350-bed tertiary health care centre is situated in Central East Nepal in Kavre district, 30 Km from Kathmandu city. The present study corroborates with the Helsinki Declaration as the data was collected after the approval of Institute Review Board of Kathmandu University of Medical Science. Histopathological data of 1850 biopsied cases of head and neck lesions during the period of last 14 years (2001-2014) were extracted from the archives of Department of General Pathology. The cases were segregated according to C00-C14 and C30-32 categories of International Classification of Disease, 10th edition (ICD-10). These cases were further categorised according to demographic profile (age and gender), histopathological diagnosis and tumour loction. The final data were entered and analysed using SPSS, version 16.0(SPSS Inc., Chicago, IL, USA).

## RESULTS

A total of 240 cases matched our inclusion criteria and were selected for this study. Out of total 240 cases of Head and Neck Cancer; 104 (43.3%) were female and 136 (56.7%) were male resulting in ratio of 1:1.3 (Female: Male); however mean age of 52 years (52.82±1.8) were same for both gender. Year wise distribution showed that in year 2006 maximum number of cases (38 patients; 15.8%) were diagnosed with cancer (Fig. 1). Age wise distribution showed 61-70 year age group as the most affected group (Fig. 2). The most common affected site was oral cavity (60 cases; 25%) followed by skin (36 cases; 15%), thyroid (32 cases; 13.33%) and oesophagus (27 cases; 11.25%). In the oral cavity, buccal mucosa (n=19;31.67%) was the most common



**Figure 1.** Year and gender wise distribution of head and neck cancer.

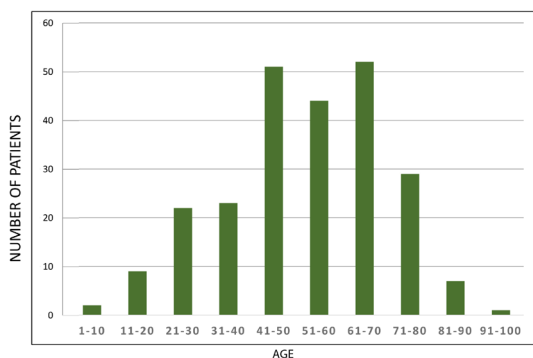


Figure 2. Age wise distribution of head and neck cancer.

Table 1. Site wise distribution of head and neck cancer.

Site	Frequency	Percent
Tonsil	3	1.2
Thyroid	32	13.3
Skin	36	15
Lymph Node	39	16.2
Oesophagus	27	11.2
Salivary Gland	11	4.6
Maxillary Sinus	4	1.7
Nasal Cavity	7	2.9
Larynx	14	5.8
Pharynx	7	2.9
Oral Cavity	60	25
<b>Total</b>	<b>240</b>	<b>100</b>
<b>Oral Cavity</b>		
Floor of Mouth	5	8.3
Alveolar Ridge	9	15
Buccal Mucosa	19	31.67
Lip	7	11.67
Tongue	13	21.67
Palate	5	8.3
Gingiva	2	3.3
<b>Total</b>	<b>60</b>	<b>100</b>

site followed by tongue (n=13; 21.67%) and alveolar ridge (n=9, 15%). In 39 cases (16.25%) involvement of cervical lymph nodes were found. Histopathology reports were positive for dysplastic changes in lymph nodes, however the primary sites responsible for the same were not mentioned in the database (Table 1). 202 (84.16%) of the cancer patients were diagnosed with carcinoma, 31 (15%) with lymphoma, 3 (1.25%) with melanoma, 2 (0.83%) with small round cell tumor and 2 (0.83%) with sarcoma. The most common histological variants seen were Squamous cell carcinoma (138 cases; 57.5%) followed by papillary carcinoma (26 cases; 10.8%) and Non-Hodgkin's lymphoma (21 cases; 8.75%) (Table 2).

Table 2. Histological types of head and neck cancer.

Histological Types	Frequency	Percent
Squamous Cell Carcinoma	138	57.5
Papillary Carcinoma	26	10.8
Non Hodgkin Lymphoma	21	8.8
Basal Cell Carcinoma	15	6.2
Adenocarcinoma	13	5.4
Other Lymphomas	6	2.5
Hodgkin Lymphoma	4	1.7
Follicular Carcinoma	3	1.2
Melanoma	3	1.2
Acinic Cell Carcinoma	2	0.8
Mucoepidermoid Carcinoma	2	0.8
Small Round Cell Tumor	2	0.8
Anaplastic Carcinoma	1	0.4
Lieomyosarcoma	1	0.4
Chondrosarcoma	1	0.4
Myoepithelial Carcinoma	1	0.4
Transitional Cell Carcinoma	1	0.4
<b>Total</b>	<b>240</b>	<b>100</b>

## DISCUSSION

Evaluation of head and neck cancer incidence rate globally has shown significant discrepancy in trends by sub-site, country and gender. This contrast in trends is basically the reflection of diversity in prevalence of different risk factors around the globe.<sup>13</sup> That is why, formulation of health policies to control cancer varies from country to country. As such, these health policies will only be effective when they are formulated on the basis of regional epidemiological cancer data.<sup>14</sup> In spite of many studies conducted by previous authors, separate data of head and neck cancer of central east region of Nepal is not available. One of the reasons for this disparity is because of presence of numerous cancer referral centres in Kathmandu (Central) and authors preferred collection of data from those centres. Hence, we have conducted this study with an intention of reporting those undocumented cases which were diagnosed and treated in our tertiary health care centre.

In our present study, maximum numbers of patients were in 5<sup>th</sup>-7<sup>th</sup> decade of their life accounting for 61% of total cancer cases. In our study, male predominance was greater than female as observed in previous studies.<sup>15-17</sup> Among males, maximum number of patients were in the 5<sup>th</sup> and 7<sup>th</sup> decade with 29 (21.3%) cases each. Among females, maximum number (n= 23, 22.1%) were in 7<sup>th</sup> decade followed by 5<sup>th</sup> decade (n=22, 21.1%). The most common affected site in male was oral cavity (n=43, 31.6%) followed by oesophagus (n=18, 13.2%), and skin (n = 13, 9.5%). In females, the most common site was thyroid (n= 25, 24.03%) followed by skin (n=23, 22.1%) and oral cavity (n=17, 16.3%). According to

some other studies conducted in Central Nepal, laryngeal and pharyngeal cancer was found to be more common in males.<sup>18,19</sup> This difference might be because of difference in facilities available in different institutes. However, Kishore et al. who had conducted a multi-institutional study for cancer incidence in Nepal, had found oral cancer as the most common cancer in males followed by lung cancer.<sup>12</sup> Franceschi S et al. who conducted a study to observe oral and pharyngeal cancer incidence worldwide have found oral cancer to be most common in Indian subcontinent, nasopharyngeal cancer to be more common in Hong Kong and pharyngeal/laryngeal cancer to be more common in other populations.<sup>20</sup> Based on the specific site within the oral cavity it was found in our study that buccal mucosa (n=19; 31.67%) was the most common affected site followed by tongue (n=13; 21.67%) and alveolar ridge (n=9, 15%). These findings were similar with the study conducted by Bhurgri et al. in the population of Karachi.<sup>21</sup> Same findings were also observed in studies conducted by Sue et al. and Sharma et al. in Taiwanese and Indian population respectively.<sup>22,23</sup>

In the present study, 84.16 % (n=202) of head and neck cancer were epithelial in origin. This finding was similar to the other studies conducted by Baskota et al. and Thapa et al. in Central Nepal where it was found to be 95% and 90% respectively.<sup>18,19</sup> In our study, squamous cell carcinoma accounts for 68.3% (n=138) of total carcinomas (n=202), which was similar to Baskota et al. and Thapa et al. where it was 78% and 75% respectively.<sup>18,19</sup> In a similar study conducted by Bhattacharjee et al. in Indian population, squamous cell carcinoma was the most common histological variants in carcinoma of head and neck region.<sup>26</sup> Papillary Carcinoma (n=26,12.8%), was the second most common carcinoma followed by basal cell carcinoma (n=15,7.42%) and adenocarcinoma (n=13, 6.43%). The other studies done in Central Nepal has shown comparatively less prevalence of basal cell carcinoma than our study.<sup>18,19</sup>

Other studies done in central Nepal didn't report any case of sarcomas but two cases (0.8%) of sarcomas (chondrosarcoma and leiomyosarcoma) were reported in our study.<sup>18,19</sup> However, one other study conducted in Western development region of Nepal has documented three cases of sarcoma.<sup>14</sup> Our study reported 31 cases (12.9%) of lymphomas among other head and neck malignancy. This included 21 cases (67.74%) of Non Hodgkin lymphoma and four cases (12.9%) of Hodgkin lymphoma. Six other cases (19.3%) of lymphoma were present in the records but the type of lymphoma was not specified. Thapa et al. reported only one case of non-Hodgkin lymphoma.<sup>19</sup> And Baskota et al. reported 5% cases of lymphoma from total of 159 cases of head and neck malignancy, however

there were no description of its subtype in that particular study.<sup>18</sup> Savita Lasrado et al. have also mentioned just two cases of Non-Hodgkin's lymphoma in their study among population of Western Development region of Nepal.<sup>14</sup>

Our study also reported two cases (0.8%) of small round cell tumour which is a rare malignant condition especially in head and neck region. Such tumors are more difficult to diagnose due to their undifferentiated and primitive character.<sup>22</sup> No such cases were reported in previous studies done in Nepal.<sup>14,18</sup> However, Lettieri et al. in their study concluded that it is as rare as 0.1 cases/million among Asian Pacific Islander.<sup>25</sup> In the same study, prevalence rate of this tumour in facial region was found to be 2.08% (n=4).

Based on the findings of this study it can be observed that oral cavity was the most common site for head and neck cancer followed by skin, thyroid and oesophagus. In the oral cavity, buccal mucosa was the most common site followed by tongue, alveolar ridge and lip. Females were more prone for thyroid carcinoma and males for oral cancer.

#### Limitations

Our study was a hospital based study, hence it doesn't represent the whole population of Central East Nepal. Also, as mentioned earlier patients suspected for malignancies, most of the time are referred to renowned cancer hospitals with more advanced treatment modalities rather than tertiary health care centres like ours. These are the two limitations which we think our study is having.

#### CONCLUSION

We would like to conclude this present study with the hope that pattern of head and neck cancer observed in the study will be helpful to provide a reliable and useful information to health care agencies for formulation of better health care policies to combat head and neck cancer in future. Through this study, we also appeal to other tertiary centres to document these cancer cases, despite the number of cases to make our health care policies more effective. An extensive epidemiological survey including all tertiary health care centres, to determine exact etiopathogenesis and to generate awareness for the prevention of cancer is still required in Nepal.

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