

## EPIDEMIOLOGY OF HEAD & NECK CANCER IN 15 DISTRICTS OF VARIOUS GEOGRAPHICAL REGIONS IN NEPAL 2013-2017

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### Abstract

Head & neck cancer in Nepal was increasing every year. In this study we focus to determine the current status and trend of head & neck cancer. This was a descriptive epidemiological study with primary and secondary data analysis of new head and neck cancer that were recorded and collected in different data source institution at 15 districts of Nepal from 1<sup>st</sup> January to 31<sup>st</sup> December 2013, 2014, 2015, 2016 and 2017. The data analysis was carried out by using SPSS 19.0. The trend of head & neck cancer was seen to be fluctuating yearly during the study period. Though well organized awareness activities, and screening programs are needed to prevent and control the burden of head & neck cancer in our communities.

**Keywords:** Cancer Epidemiology, Head & Neck cancer, Incidence.

### INTRODUCTION

Cancer epidemiology is the study of the distribution and determinants of the likelihood of cancer development. Cancer epidemiology can be used to identify events that increase or decrease cancer incidence in specific populations. Head and neck cancer is the sixth most common cancer in the world, and the largest burden occurs in developing countries. Head and neck cancer is a group of cancers that starts in the mouth, nose, throat, larynx, sinuses, or salivary glands etc. The annual incidence of head and neck cancers worldwide is more than 550,000 cases with around 300,000 deaths each year. Male to female ratio ranges from 2:1 to 4:1. About 90% of all head and neck cancers are squamous cell carcinomas (HNSCC). HNSCC is the sixth leading cancer by incidence worldwide. Similarly, 57.5% in Asia and largely in India (20 per 100,000 population). In recent days, the observation of the data of the head and neck cancer shows its increasing condition. Even in Nepal, the head and neck cancer is giving to increasing rapidly. According to the medical science, the poor hygiene, alcohol, tobacco use, HPV infection are its major factors. In this regard, Cancer epidemiology can be used to identify events that increases or decreases cancer incidence in specific populations. Cancer is a group of disease characterized by uncontrolled, growth, invasion and spread (Metastasis) of abnormal cells. In cancer, normal mechanism of control of growth and cell division are disturbed. Cancer is synonymous with the term "malignant tumor". Cancer one of the common and most important non-communicable disease increasing around the world with marked rise in the least developed parts of the world. Preventing cancer is an important scientific and public health goal of this century. Cancer is becoming a growing public health problem in our country too.

The global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018 (GLOBO CAN 2018). Globally, about 1 in 6 deaths is due to cancer. Approximately 70% of deaths from cancer occur in low- and middle-income countries. Asia accounts for 60% of the world population and half the global burden of cancer. The incidence of cancer cases is estimated to increase from 6.1 million in 2008 to 10.6 million in 2030. According to WHO, India has a cancer mortality rate of 79 per 100,000 deaths and accounts for over 6 percent of total deaths. These numbers are very close to those of high.

### MATERIALS AND METHODS

This study carried out in the cancer registry unit of B. P. Koirala Memorial Cancer Hospital, Bharatpur, Chitwan, Nepal. The information of all new cancer cases were collected, check, edit and entered in computer using proprietary software. In order to avoid multiple entry of the cases, the data base were verified by name, age, sex, address, topography and morphology of cancer cases. All multiple entries were deleted from the data base. Then, the data was coded according to ICD-o3 and ICD-10 and proceed for analysis by using SPSS 19.0.

#### Limitation of the study

Epidemiological Study from 1<sup>st</sup> January to 31<sup>st</sup> December 2013-2017 in 15 District of various geographical region in Nepal.

#### Data sources

District Hospital, Medical college and other hospitals. District Health and Public Health Office and other relevant organizations. DDC /VDC/Municipal, i.e.office of vital event registration. Privet hospitals, Diagnostic lab, hospice etc.

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**Table 1. Area and population covered by this study**

S.N.	District's Name	Male	Female	Total
1	Chitwan	298400	297681	658114
2	Makwanpue	243921	238877	528160
3	Bara	361920	347026	708947
4	parsa	322851	305630	628481
5	Nawalparasi	350017	352031	702048
6	Rupandehi	456337	445481	901818
7	Kapilvastu	306323	295986	602309
8	Dhading	204735	207581	412317
9	Gorkha	165830	175941	341771
10	Myagdi	65686	69928	135613
11	Tanahun	183533	195926	378559
12	Baglung	154590	166206	320796
13	Parbat	89095	95287	320796
14	Kaski	235364	240541	475905
15	Mustang	9017	8146	17163
<b>Total</b>		<b>3447619</b>	<b>3442268</b>	<b>6889887</b>

Total population of Nepal: 2,66,208,09(2068)

Total Population of Project area: 68,89,887

Coverage25.88% of total population

**Table 3. Distribution of cases by districts and sex-2015**

Distribution of cases by districts and sex						
Districts	Male		Female		Total	
	#	%	#	%	#	%
Baglung	64	5.0	88	5.2	152	5.2
Bara	68	5.4	101	6.0	169	5.7
Chitwan	176	13.8	198	11.8	374	12.7
Dhading	103	8.1	114	6.8	217	7.4
Gorkha	94	7.4	126	7.5	220	7.5
Kapilvastu	67	5.3	79	4.7	146	4.9
Kaski	154	12.1	215	12.8	369	12.5
Makwanpur	102	8.0	111	6.6	213	7.2
Mustang	6	0.5	12	0.7	18	0.6
Myagdi	20	1.6	43	2.6	63	2.1
Nawalparasi	104	8.2	172	10.2	276	9.4
Parbat	55	4.3	68	4.1	123	4.2
Parsa	69	5.4	82	4.9	151	5.1
Rupendehi	117	9.2	165	9.8	282	9.6
Tanahun	72	5.7	105	6.3	177	6.0
<b>Total</b>	<b>1271</b>	<b>100.0</b>	<b>1679</b>	<b>100.0</b>	<b>2950</b>	<b>100.0</b>

**Table 2. Distribution of cases by districts – 2013&2014**

Distribution of cases by districts and year					
Districts	Year	Year			
		2013		2014	
		#	%	#	%
1	Baglung	96	3.9	129	4.9
2	Bara	165	6.7	176	6.7
3	Chitawan	359	14.5	424	16.2
4	Dhading	157	6.4	183	7.0
5	Gorkha	153	6.2	150	5.7
6	Kapilbastu	95	3.8	107	4.1
7	Kaski	323	13.1	325	12.4
8	Makawanpur	180	7.3	180	6.9
9	Mustang	10	0.4	15	0.6
10	Myagdi	44	1.8	47	1.8
11	Nawalparasi	241	9.8	248	9.5
12	Parbat	89	3.6	93	3.5
13	Parsa	123	5.0	146	5.6
14	Rupandehi	303	12.3	259	9.9
15	Tanahu	131	5.3	138	5.3
<b>Total</b>		<b>2469</b>	<b>100.0</b>	<b>2620</b>	<b>100.0</b>

**Table 4. Distribution of cases by districts and sex-2016**

Distribution of cases by districts and sex						
Districts	Male		Female		Total	
	#	%	#	%	#	%
Baglung	45	3.29	99	6.69	144	4.63
Bara	96	7.02	124	7.13	220	7.08
Chitwan	159	11.63	168	9.66	327	10.53
Dhading	98	7.17	89	5.12	187	6.02
Gorkha	89	6.51	113	6.50	202	6.50
Kapilvastu	65	4.75	62	3.56	127	1.99
Kaski	194	14.20	272	15.65	466	15.01
Makwanpur	107	7.83	124	7.13	231	7.44
Mustang	4	0.29	3	0.17	7	0.22
Myagdi	23	1.68	38	2.18	61	1.96
Nawalparasi	133	9.73	166	9.55	299	9.63
Parbat	56	4.09	59	3.39	115	3.70
Parsa	75	5.49	124	7.13	199	6.41
Rupendehi	124	9.07	179	10.29	303	9.76
Tanahun	98	7.17	188	10.81	216	6.95
<b>Total</b>	<b>1366</b>	<b>100.00</b>	<b>1738</b>	<b>100.00</b>	<b>3104</b>	<b>100.00</b>

**Table 5. Distribution of cases by districts and sex-2017**

Distribution of cases by districts and sex						
Districts	Male		Female		Total	
	#	%	#	%	#	%
Baglung	60	4.15	70	4.15	130	3.99
Bara	116	8.02	141	8.02	257	7.88
Chitwan	182	12.59	233	12.59	415	12.73
Dhading	87	6.02	101	6.02	188	5.77
Gorkha	81	5.60	124	5.6	205	6.29
Kapilvastu	65	4.50	68	4.5	133	4.08
Kaski	181	12.52	216	12.52	397	12.18
Makwanpur	117	8.09	134	8.09	251	7.70
Mustang	8	0.55	9	0.55	17	0.52
Myagdi	28	1.94	39	1.94	67	2.06
Nawalparasi	130	8.99	164	8.99	294	9.02
Parbat	53	3.67	56	3.67	109	3.34
Parsa	84	5.81	117	5.81	201	6.17
Rupendehi	150	10.37	195	10.37	345	10.58
Tanahun	72	4.98	147	4.98	251	7.70
<b>Total</b>	<b>1446</b>	<b>100.00</b>	<b>1814</b>	<b>100.00</b>	<b>3260</b>	<b>100.00</b>

## INCLUSION CRITERIA

The inclusion criteria of cancer cases were set up by National Cancer Registry as follows:

Those Cases living permanently in the study area, as per define population in census. Diagnosed cases of cancer including mortality in the study year are included. The minimum diagnostic criteria included tissue diagnosis (HPE or cytology)

## RESULTS

Table 6. Head &amp; neck cancer cases for 2013

Head & neck cancer cases by topography and sex						
S.N.	ICD-10	Topography	2013		Total	%
			Sex			
			Male	Female		
1	C 32	Larynx	59	35	94	3.8
2	C 71	Brain	33	37	70	2.8
3	C 02	Other & unspecified parts of tongue	30	15	45	1.8
4	C 73	Thyroid	11	26	37	1.4
5	C 06	Other & unspecified parts of mouth	23	8	31	1.2
6	C 12	Pyriiform sinus	25	2	27	1.0
7	C 11	Nasopharynx	16	8	24	0.9
8	C 04	Floor of mouth	11	3	14	0.5
9	C 09	Tonsil	9	2	11	0.4
10	C 31	Accessory sinus	6	4	10	0.4
11	C 05	Palate	7	2	9	0.3
12	C 70	Meninges	3	6	9	0.3
13	C 00	Lip	8	0	8	0.3
14	C 30	Nasal cavity & middle ear	3	5	8	0.3
15	C 10	Oropharynx	6	0	6	0.2
16	C 08	Other & unspecified major salivary glands	4	1	5	0.2
17	C 14	Other & ill defined sites in lip oral cavity & mouth	4	1	5	0.2
18	C 69	Eye & adnexa	0	5	5	0.2
19	C 03	Gum	1	2	3	0.1
20	C 01	Base of tongue	2	0	2	0.08
21	C 13	Hypopharynx	1	1	2	0.08
22	C33	Trachea	1	0	1	0.04
23	C 75	Other endocrine glands & related structure	1	0	1	0.04
24	***	Total cases of head & neck cancer	264	163	422	17.0
25	***	Other cancers	849	1193	2047	82.9
26	***	Cancer cases for the year	1113	1356	2469	100.0

Table 7. Head &amp; neck cancer cases for 2014

Head & neck cancer cases by topography and sex						
S.N.	ICD-10	Topography	2014		Total	%
			Sex			
			Male	Female		
1	C 32	Larynx	58	27	85	3.2
2	C 71	Brain	39	34	73	2.7
3	C 02	Other & unspecified parts of tongue	33	19	52	1.9
4	C 73	Thyroid	10	37	47	1.7
5	C 06	Other & unspecified parts of mouth	30	11	41	1.5
6	C 12	Pyriiform sinus	27	1	28	1.0
7	C 69	Eye & adnexa	14	9	23	0.8
8	C 30	Nasal cavity & middle ear	9	8	17	0.6
9	C 11	Nasopharynx	8	8	16	0.6
10	C 05	Palate	7	5	12	0.4
11	C 03	Gum	7	3	10	0.3
12	C 00	Lip	4	4	8	0.3
13	C 04	Floor of mouth	4	4	8	0.3
14	C 10	Oropharynx	6	2	8	0.3
15	C 31	Accessory sinus	4	4	8	0.3
16	C 08	Other & unspecified major salivary glands	5	1	6	0.2
17	C 09	Tonsil	2	2	4	0.1
18	C 70	Meninges	0	4	4	0.1
19	C 13	Hypopharynx	3	0	3	0.1
20	C 14	Other & ill defined sites in lip, oral cavity & mouth	2	0	2	0.07
21	C 75	Other endocrine glands & related structures	0	2	2	0.07
22	C 01	Base of tongue	1	0	1	0.03
23	***	Total cases of head & neck cancer	273	185	458	17.4
24	***	Other cancer	815	1347	2162	82.5
25	***	Total cancer cases for the year	1088	1532	2620	100.0

Table 8. Head and neck cancer for 2015

Head and neck cancer cases by topography and sex						
S.N.	ICD -10	Topography	Sex		Total	
			Male	Female	#	%
1	C 00	Lip	4	0	4	0.1
2	C 02	Other and unspecified parts of tongue	39	17	56	1.9
3	C 03	Gum	11	3	14	0.5
4	C 04	Floor of mouth	2	1	3	0.1
5	C 05	Palate	7	0	7	0.2
6	C 06	Other and unspecified parts of mouth	28	8	36	1.2
7	C 07	Parotid gland	7	5	12	0.4
8	C 08	Other and unspecified major salivary glands	2	3	5	0.2
9	C 09	Tonsil	8	3	11	0.4
10	C 10	Oropharynx	2	2	4	0.1
11	C 11	Nasopharynx	14	6	20	0.7
12	C 12	Pyriiform sinus	29	8	37	1.3
13	C 13	Hypopharynx	2	2	4	0.1
14	C 14	Other and ill-defined sites in lip, oral cavity and pharynx	4	0	4	0.1
15	C 30	Nasal cavity and middle ear	10	7	17	0.6
16	C 31	Accessory sinus	4	4	8	0.3
17	C 32	Larynx	62	37	99	3.4
18	C 69	Eye and adnexa	7	1	8	0.3
19	C 70	Meninges	1	3	4	0.1
20	C 71	Brain	51	45	96	3.3
21	C 73	Thyroid gland	9	38	47	1.6
22	C 75	Other endocrine glands and related structures	1	0	1	0.0
23	C 76	Other and ill-defined sites of head, face & neck	6	8	14	0.4
24	***	Total cases of head & neck cancer	310	20 \1	511	17.32
25	***	Other cancer cases	961	1478	2439	82.6
26	***	Total cancer cases for the year	1271	1679	2950	100.0

Table 9. Head and neck cancer for 2016

Head and neck cancer cases by site and sex						
S.N.	ICD-10	Topography	Sex		Total	
			Male	Female	#	%
1	C00	Lip	5	4	9	0.28
2	C02	Other and unspecified parts of tongue	47	16	63	2.02
3	C03	Gum	7	4	11	0.35
4	C04	Floor of mouth	3	3	6	0.19
5	C05	Palate	4	3	7	0.22
6	C06	Other and unspecified parts of mouth	45	11	56	1.80
7	C07	Parotid gland	2	8	10	0.32
8	C08	Other and unspecified major salivary glands	1	4	5	0.16
9	C09	Tonsil	4	1	5	0.16
10	C10	Oropharynx	3	2	5	0.16
11	C11	Nasopharynx	14	7	21	0.67
12	C12	Pyriiform sinus	21	4	25	0.80
13	C14	Other and ill-defined sites in lip, oral cavity and pharynx	3	1	4	0.12
14	C30	Nasal cavity and middle ear	12	9	21	0.67
15	C31	Accessory sinus	1	5	6	0.19
16	C32	Larynx	68	19	87	2.80
17	C69	Eye and adnexa	7	1	8	0.25
18	C70	Meninges	1	2	3	0.09
19	C71	Brain	82	41	123	3.96
20	C73	Thyroid gland	9	43	52	1.67
21	C75	Other endocrine glands and related structures	0	1	1	0.03
22	C76	Other and ill-defined sites of head, face & neck	10	6	16	0.51
23	***	Total cases of head & neck cancer	349	195	544	17.52
24	***	Other cancer cases	1017	1543	2560	82.47
25	***	Total cancer cases for the year	1366	1738	3104	100.00

## DISCUSSION

This epidemiological study was undertaken at cancer registry unit of BP Koirala memorial cancer hospital, Bharatpur, Chitwan, Nepal, Which is only national cancer institute of the nation, using primary and secondary data from study area in 2013, 2014, 2015, 2016 and 2017. A total of 14403 cases were of registered during 1st January to 31st December of 2013-2017. Whereas, only 2458 cases were different site of head & neck cancer . Among the head & neck cancer topography, C 71 brain ranked as a common topography followed by larynx C 32 and C02 other mouth.

## CONCLUSION

Among the reported cases of head & neck cancer, brain was the common cancer sites for both sex followed by larynx and other& unspecified parts of tongue.

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