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Epidemiological Study on Oral Cancer from Various Districts of Nepal 2013-2016

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ABSTRACT

Cancer epidemiology can be used to identify events that increases or decreases cancer incidence in specific populations. Oral cancer, also known as mouth cancer, is cancer of the lining of the lips, mouth, or upper throat. Oral cancer incidence doesn't mean that only one bodily cancer but it covers the lip, mouth, palate, gum, and above all the cavity along with the other unspecified sides.

Cancer of the oral cavity (Oral cancer) is the 11th most common malignancy in the world, despite the general global trend of a slight decrease in the incidence of oral cancer, tongue cancer incidence is increasing. About 90% of tumors are subtyped to oral Squamous cell carcinoma (OSCC). The incidence and mortality of this tumor shows variability according to the geographic location in which it is diagnosed, however in the last decade an increase was seen in the percentage of young patients, especially patients with tongue cancer.

Various hospital based cancer researches showed that Cancer incidence including oral cancer burden in Nepal was increasing every year. But exact cancer incidence, death and relevant community based details of cancer is unknown. Therefore the aim of this study is to determine the incidence of oral cancer and assess its trend in the fifteen districts of Nepal for 2013-2016 A.D.

This population based descriptive epidemiological study was based on secondary data derived from various sources where recorded new oral cancer every year since January 2013 to December 2016.

Among the reported cases of oral cancer topography, other and unspecified parts of tongue C 02 was the first leading cancer site followed by other and unspecified parts of mouth C 06 and gum C03 for both sex. Among the female cases other tongue C 02 was the leading cancer cases followed by other mouth C 06 and gum C03. Similarly, other tongue C02 was the most common cancer among males, followed by other mouth C 06 and gum C 03.

Oral cancer was found to be increased in the year 2013 and 2014 whereas relatively decreased in 2015 A. D. as because, the earthquake of 2015 was a

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major factor to access the cancer diagnosis and treatment which decrease the patient flow at hospital and other data source institution. According to collected data oral cancer was increased in 2016. The trend of oral cancer was seen to be fluctuating yearly during the study period. Though well organized awareness activities, HPV vaccination and screening programs are still needed to prevent and control the incidence of oral cancer in our communities.

Keywords : Cancer epidemiology, Incidence, Oral cancer, Population

I. INTRODUCTION

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.

Globally, about 1 in 6 deaths is due to cancer. Approximately 70% of deaths from cancer occur in low- and middle-income countries. (GLOBO CAN 2018).

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-income countries.

Oral cancer, also known as mouth cancer, is cancer of the lining of the lips, mouth, or upper throat.

In the mouth, it most commonly starts as a painless white patch, that thickens, develops red patches, an ulcer, and continues to grow. When on the lips, it commonly looks like a persistent crusting ulcer that does not heal, and slowly grows.

Other symptoms may include difficult or painful swallowing, new lumps or bumps in the neck, a swelling in the mouth, or a feeling of numbness in the mouth or lips.

In 2018, oral cancer occurred globally in about 355,000 people, and resulted in 177,000 deaths.

Between 1999 and 2015 in the United States, the rate of oral cancer increased 6% (from 10.9 to 11.6 per 100,000). Deaths from oral cancer during this time deceased 7% (from 2.7 to 2.5 per 100,000).

Oral cancer, which includes cancers of the lips, tongue, cheeks, floor of the mouth, hard and soft palate, sinuses, and pharynx (throat), can be life threatening if not diagnosed and treated early.
Cancer of the oral cavity (Oral cancer) is the 11th most common malignancy in the world, despite the general global trend of a slight decrease in the incidence of oral cancer, tongue cancer incidence is increasing. About 90% of tumors are subtyped to oral

Squamous cell carcinoma (OSCC). The incidence and mortality of this tumor shows variability according to the geographic location in which it is diagnosed, however in the last decade an increase was seen in the percentage of young patients, especially patients with tongue cancer.

Cancer incidence including oral cancer burden in Nepal was increasing every year. Exact cancer incidence, death and relevant community based details of cancer in Nepal is unknown to address the need of community based epidemiological study this was initiated community based cancer research in 15 districts of four state of Nepal. In this study we focus to determine the current status and trend of oral cancer. As well as astrological risk factor analysis or oral cancer.

In recent days, the observation of the data of the oral cancer shows its increasing condition. Even in Nepal, the oral cancer is giving to increasing rapidly. According to the medical science, the tobacco use, poor hygiene, alcohol, HPV infection are its chief/major factors.

Oral cancer, also known as mouth cancer, is cancer of the lining of the lips, mouth, or upper throat.[6] In the mouth, it most commonly starts as a painless white patch, that thickens, develops red patches, an ulcer, and continues to grow. When on the lips, it commonly looks like a persistent crusting ulcer that does not heal, and slowly grows.[7] Other symptoms may include difficult or painful swallowing, new lumps or bumps in the neck, a swelling in the mouth, or a feeling of numbness in the mouth or lips.[8]
Risk factors include tobacco and alcohol use.[9][10] With both tobacco and drinking alcohol, the risk of oral cancer is 15 times greater.[11] Other risk factors include HPV infection,[12] chewing paan,[13] and sun exposure on the lower lip.[14] Oral cancer is a subgroup of head and neck cancers.[6] Diagnosis is made by biopsy of the concerning area, followed by investigation with CT scan, MRI, PET, and examination to determine if it has spread to distant parts of the body.

Table 1 : National Scenario of Hospital Based Oral Cancer (C00-C06) by Site and Sex – 2013

Distribution of cases (C00 - C06 oral cavity) by site and sex - 2013							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C 00	Lip	27	7.9	8	7.1	35	7.7
C 01	Base of tongue	7	2.0	1	0.9	8	1.8
C 02	Other & unspecified parts of tongue	107	31.3	51	45.1	158	34.7
C 03	Gum	17	5.0	8	7.1	25	5.5
C 04	Floor of mouth	26	7.6	8	7.1	34	7.5
C 05	Palate	22	6.4	8	7.1	30	6.6
C 06	Other & unspecified parts of mouth	136	39.8	29	25.7	165	36.3
Total		342	100.0	113	100.0	455	100.0

Table 2 : National Scenario of Hospital Based Oral Cancer (C00 - C06) by Site and Sex - 2014

Distribution of cases (C00-C06 / oral cavity) by site and sex							
		Sex				Total	
		Male		Female			
ICD-10	Topography	#	%	#	%	#	%
C 00	Lip	18	0.5	7	4.6	25	5.0
C 01	Base of tongue	3	0.1	0	0.0	3	0.6
C 02	Other & unspecified parts of tongue	134	3.8	64	42.1	198	39.6
C 03	Gum	37	1.1	18	11.8	55	11.0
C 04	Floor of mouth	17	0.5	6	3.9	23	4.6
C 05	Palate	15	0.4	11	7.2	26	5.2
C 06	Other & unspecified parts of mouth	124	3.6	46	30.3	170	34.0
Total		348	10.0	152	100.0	500	100.0

Table 3 : National Scenario of Hospital Based Oral Cancer (C00 - C06) by Site and Sex - 2015

Distribution of cases (C00 - C06 oral cavity) by site and sex							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C00	Lip	27	7.6	9	5.9	36	7.6
C01	Base of tongue	2	0.6	0	0.0	2	0.4
C02	Other and unspecified parts of tongue	119	33.3	53	34.9	172	36.5
C03	Gum	66	18.5	13	8.6	79	16.8
C04	Floor of mouth	13	3.6	4	2.6	17	3.6
C05	Palate	12	3.4	4	2.6	16	3.4
C06	Other and unspecified parts of mouth	118	33.1	31	20.4	149	31.6
Total		357	100.0	114	75.0	471	100.0

Table 4 : Study area and population

S.N.	District's Name	Male	Female	Total	%
1	Chitwan	298400	297681	658114	9.5
2	Makwanpue	243921	238877	528160	7.6
3	Bara	361920	347026	708947	10.2
4	parsa	322851	305630	628481	9.1
5	Nawalparasi	350017	352031	702048	10.1
6	Rupandehi	456337	445481	901818	13.0
7	Kapilvastu	306323	295986	602309	8.7
8	Dhading	204735	207581	412317	5.9
9	Gorkha	165830	175941	341771	4.9
10	Myagdi	65686	69928	135613	1.9
11	Tanahun	183533	195926	378559	5.4
12	Baglung	154590	166206	320796	4.6
13	Parbat	89095	95287	320796	4.6
14	Kaski	235364	240541	475905	6.9
15	Mustang	9017	8146	17163	0.2
Total		3447619	3442268	6889887	100.0

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

Total Population of Project area: 68,89,887

Coverage25.88% of total population

Table 5 : Distribution of cancer cases by districts of study area

Distribution of cancer cases by districts and year					
Districts		Years			
		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
Total		2469	100.0	2620	100.0

Table 6 : Distribution of cancer 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
Total	1271	100.0	1679	100.0	2950	100.0

Table: 7 Distribution cases (C00-C06) by site and sex for 2013 – 2014

Distribution of cases (C00 - C 06) by site and sex									
Total %	ICD-10	Topography	2013			2014			Total %
			Sex		Total	Sex		Total	
			Male	Female		Male	Female		
	C 00	Lip	8	0	8	4	4	8	
	C 01	Base of tongue	2	0	2	1	0	1	
	C 02	Other & unspecified parts of tongue	30	15	45	33	19	52	
	C 03	Gum	1	2	3	7	3	10	
	C 04	Floor of mouth	11	3	14	4	4	8	
	C 05	Palate	7	2	9	7	5	12	
	C 06	Other & unspecified parts of mouth	23	8	31	30	11	41	
	C00-C06	Total cancer of oral cavity C00-C06	82	30	112	86	46	132	
	**	Other cancers	1031	1326	2357	1002	1486	2488	
	**	Total cancer cases for the years	1113	1356	2469	1088	1532	2620	

Table 8 : Distribution of cases (C00 - C06) by site and sex for both sex – 2015

Distribution of cases (C00 - C06) by site and sex for both sex					
ICD-10	Topography	Sex		Total	
		Male	Female	#	
C00	Lip	4	0	4	
C02	Other and unspecified parts of tongue	39	17	56	
C03	Gum	11	3	14	
C04	Floor of mouth	2	1	3	
C05	Palate	7	0	7	
C06	Other and unspecified parts of mouth	28	8	36	
C00-C06	Total cancer of oral cavity C00-C06	91	29	120	
**	Other cancers	1180	1650	2830	
**	Total cancers for the years	1271	1679	2950	

II. METHODS AND MATERIAL

This was a descriptive epidemiological study with primary and secondary data analysis of new oral cancer that are recorded and collected in different data source institution at 15 districts of four state of Nepal science 1st January to 31st December 2013, 2014, 2015 & 2016. The data analysis was carried out by using SPSS 19.0.

III. RESULTS AND DISCUSSION

Table 9 : Distribution of cases (C00-C06 oral cavity) by site and sex – 2013

Distribution of cases (C00 - C06 /oral cavity) by site and sex							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C00	Lip	8	0.7	0	0.0	8	0.3
C01	Base of tongue	2	0.1	0	0.0	2	0.08
C02	Other and unspecified parts of tongue	30	2.6	15	1.1	45	1.8
C03	Gum	1	0.08	2	0.1	3	0.1
C04	Floor of mouth	11	0.9	3	0.2	14	0.5
C05	Palate	7	0.6	2	0.1	9	0.3
C06	Other and unspecified parts of mouth	23	2.0	8	0.5	31	1.2
C00- C06	Total cancer of oral cavity C00-C06	82	7.3	30	2.2	112	4.5
**	Other cancers	1031	92.6	1326	97.7	2357	95.4
**	Total cancer cases for the years	1113	100.0	1356	100.0	2469	100.0

Table 10 : Distribution of cases (C00 - C06 /oral cavity) by site and sex - 2014

Distribution of cases (C00 - C06 /oral cavity) by site and sex							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C00	Lip	4	0.3	4	0.2	8	0.3
C01	Base of tongue	1	0.0	0	0.0	1	0.03
C02	Other and unspecified parts of tongue	33	3.0	19	1.2	52	1.9
C03	Gum	7	0.6	3	0.1	10	0.38
C04	Floor of mouth	4	0.3	4	0.2	8	0.3
C05	Palate	7	0.6	5	0.3	12	o.4
C06	Other and unspecified parts of mouth	30	2.7	11	0.7	41	1.5
C00-C06	Total cancer of oral cavity C00-C06	86	7.9	46	3.0	132	5.0
**	Other cancers	1002	92.0	1486	96.9	2488	94.9
**	Total cancer cases for the years	1088	100.0	1532	100.0	2620	100.0

Table 11 : Distribution of cases (C00-C06 /oral cavity) by site and sex - 2015

Distribution of cases (C00 - C06 /oral cavity) by site and sex							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C00	Lip	4	0.3	0	0.0	4	0.1
C02	Other and unspecified parts of tongue	39	3.1	17	1.0	56	1.9
C03	Gum	11	0.9	3	0.2	14	0.5
C04	Floor of mouth	2	0.2	1	0.1	3	0.1
C05	Palate	7	0.6	0	0.0	7	0.2
C06	Other and unspecified parts of mouth	28	2.2	8	0.5	36	1.2

C00-C06	Total cancer of oral cavity C00-C06	91	7.1	29	1.7	120	4.0
**	Other cancers	1180	92.8	1650	97.2	2830	95.9
**	Total cancer cases for the years	1271	100.0	1679	100.0	2950	100.0

Table 12 : Distribution of cases (C00 - C06/oral cavity) by site and sex-2016

Distribution of cases (C00 - C06/oral cavity) by site and sex					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C00	Lip	5	4	9	0.28
C02	Other and unspecified parts of tongue	47	16	63	2.02
C03	Gum	7	4	11	0.35
C04	Floor of mouth	3	3	6	0.19
C05	Palate	4	3	7	0.22
C06	Other and unspecified parts of mouth	45	11	56	1.80
C00 – C06	1) Total cancer of oral cavity C00-C06	111	41	152	4.89
**	Other cancers	1255	1697	2952	95.10
**	Total cancer cases for the years	1366	1738	3104	100.00

IV. Discussion

The epidemiological study was undertaken at 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 7 2016. A total of 3104 cases were registered during 1st January to 31st December 2016. Whereas, only 152 cases were reported for different site of oral cavity. Among the reported cases of oral cancer topography, other and unspecified parts of tongue C 02 was the first leading cancer site followed by other and unspecified parts of mouth C 06 and gum C03 for both sex. Among the female cases other tongue C 02 was the leading cancer cases followed by other mouth C 06 and gum C03. Similarly, Other tongue C 02 was the most common cancer among male, followed by other mouth C 06 and gum C 03. Oral cancer was relatively increased for 2013 to 2014. Whereas, releatively decreased in 2015. Because of earthquake suffering year in Nepal. And raised again in the year of 2016

V. Conclusion

Among the reported cases of oral cancer topography, other and unspecified parts of tongue C 02 was the first leading cancer site followed by Other and unspecified parts of mouth C 06 and gum C03 for both sex. Among the female cases other tongue C 02 was the leading cancer cases followed by other mouth C 06 and gum C03. Similarly, Other tongue C 02 was the most common cancer among males, followed by other mouth C 06 and gum C 03. Oral cancer

was relatively increased for 2013 to 2014. Whereas, relatively decreased in 2015 due to earth quack. Oral cancer cases were increased in 2016 than 2015.

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