

National Scenario of Malignant Nervous System Neoplasm in Nepal 2003 – 2015

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Abstract

Cancer registration is continuous process that collect information from hospital known as hospital based cancer registry (**HBCR**). The process of recording of cancer patients from defined population is called population based cancer registry (PBCR). Whereas, registration of special type of cancer topography is known as special registry i.e. brain tumor registry, lung cancer registry etc. A brain tumor, known as an intracranial tumor, is an abnormal mass of tissue in which cells grow and multiply uncontrollably, seemingly unchecked by the mechanisms that control normal cells. Brain tumor registration is dynamic process that collect cancer information from hospitals. To know the cancer incidence and burden of cancer patients in hospital, this program helps to know the personal and demographic information like age, sex, address, topography and morphology of the cancer patients who were registered in hospital. We are presently incorporating twelve major hospital of the nation where cancer is being treated.

National NS tumor registry Programme should be expanded to other private/Government hospitals and medical colleges where NS tumors are diagnosed and treated.

Keywords: Brain tumor registry, Hospital based, Population based, Nervous System neoplasm.

I. Introduction

There are many types of brain and spinal cord tumors. The tumors are formed by the abnormal growth of cells and may begin in different parts of the brain or spinal cord. Together, the brain and spinal cord make up the central nervous system (CNS). The tumors may be either benign (not cancer) or malignant (cancer): Malignant brain and spinal cord tumors are likely to grow quickly and spread into other brain tissue. Primary brain or spinal cord tumor is a tumor that starts in the brain or spinal cord. This year, an estimated 23,890 adults (13,590 men and 10,300 women) in the United States will be diagnosed with primary cancerous tumors of the brain and spinal cord. A person's likelihood of developing this type of tumor in their lifetime is less than 1%. Brain tumors account for 85% to 90% of all primary central nervous system (CNS) tumors.

Brain and other nervous system cancer is the 10th leading cause of death for men and women. It is estimated that 18,020 adults (10,190 men and 7,830 women) will die from primary cancerous brain and CNS tumors this year.

In Nepal 2015, total 9718 new cancer cases were reported by hospital based cancer registration among the cases 321 were belong to malignant nervous system neoplasm, this programme was supported by WHO Nepal. Nervous system cancer incidence in Nepal was increasing every year. Therefore the aim of this study is to hit upon the national scenario of malignant nervous system neoplasm burden in Nepal for 2003- 2015.

II. Methods and Materials

This is a retrospective analysis of all brain cancer patients of all age groups from major hospitals of Nepal registered between January 1st to December 31st of each years from 2013 – 2015.

III. Result

Table1

Distribution of cases by nationality - 2015		
Nationality	Number	Percent
Nepali	321	99.1
Indian	3	0.9
Total	324	100.0

Mean Age	37
Median Age	38
Min Age	1
Maximun age	90

Table 2

Distribution of cases by sex		
Sex	Number	Percent
Male	176	54.8
Female	145	45.2
Total	321	100

Figure 1 Distribution of total cases by sex

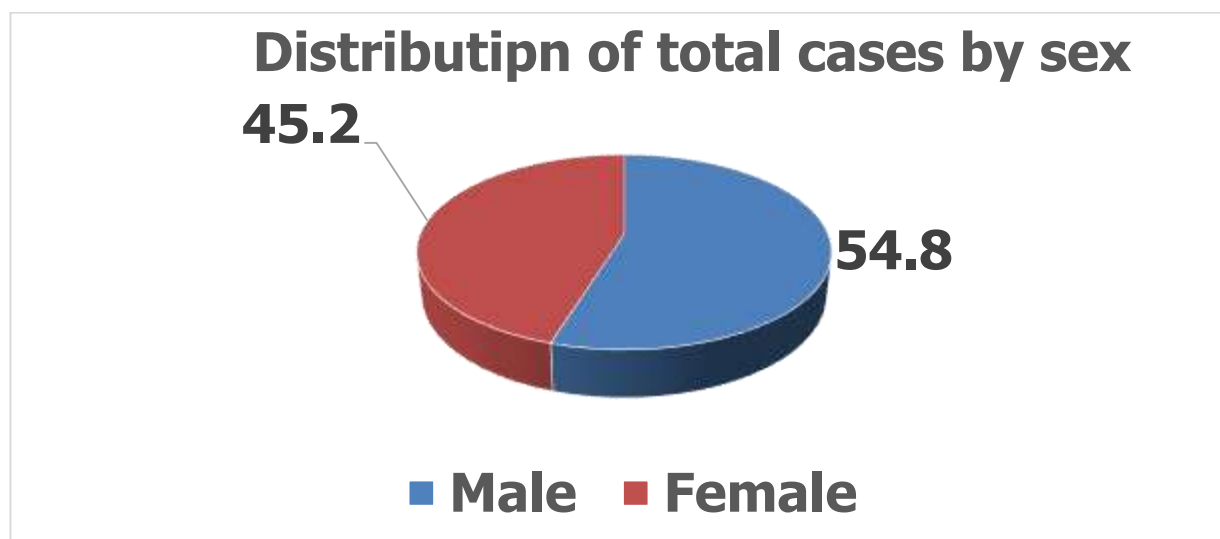


Table 3

Distribution of cases by reporting institute		
Reporting institute	Number	Percent
BPKMCH	157	48.9
BPKIHS	11	3.4
BCH	71	22.1
BH	20	6.2
TUTH	31	9.7
KCH	7	2.2
MTH	18	5.6
SBH	1	0.3
CSH	3	0.9
PAHS	1	0.3
NMC	1	0.3
Total	321	100

N. B.

BPKMCH:	BP Koirala Memorial Cancer Hospital, Bharatpur
BPKIHS:	BP Koirala Institute of Health Sciences, Dharan
BCH:	Bhaktapur Cancer Hospital, Bhaktapur
BH:	Bir Hospital, Kathmandu
TUTH:	TU Teaching Hospital, Kathmandu
KCH:	Kanti Children's Hospital, Kathmandu
MTH:	Manipal Teaching Hospital, Pokhara
SBH:	Shree Birendra Hospital, Kathmandu
CSH:	Civil Service Hospital, Kathmandu

PAHS: Patan Academic of Health Science, Lalitpur

NMCTH: Nepalgunj Medical College ,Teaching Hospital, kohalpur Banke

Table 4

Distribution of cases by reporting institute and sex						
Reporting institute	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
BPKMCH	90	51.1	67	46.2	157	48.9
BPKIHS	7	4.0	4	2.8	11	3.4
BCH	39	22.2	32	22.1	71	22.1
BH	11	6.3	9	6.2	20	6.2
TUTH	12	6.8	19	13.1	31	9.7
KCH	5	2.8	2	1.4	7	2.2
MTH	9	5.1	9	6.2	18	5.6
SBH	0	0.0	1	0.7	1	0.3
CSH	2	1.1	1	0.7	3	0.9
PAHS	0	0.0	1	0.7	1	0.3
NMC	1	0.6	0	0.0	1	0.3
Total	176	100.0	145	100.0	321	100.0

Table 5

Distribution of cases by broad age group and sex						
Broad-age group	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
0-14 yrs	41	23.2	24	16.5	65	20.2
15-34 yrs	47	26.7	33	22.7	80	24.9
35-64 yrs	68	38.6	74	51.1	142	44.2
65+ yrs	20	11.3	14	9.7	34	10.5
Total	176	100.0	145	100.0	321	100.0

Table 6

Distribution of cases by age group and sex						
Age group	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
0-4 yrs	26	14.8	16	11.0	42	13.1
5-9 yrs	0	0.0	0	0.0	0	0.0
10-14 yrs	15	8.5	8	5.5	23	7.2
15-19 yrs	11	6.3	4	2.8	15	4.7
20-24 yrs	10	5.7	8	5.5	18	5.6
25-29 yrs	13	7.4	12	8.3	25	7.8
30-34 yrs	13	7.4	9	6.2	22	6.9
35-39 yrs	18	10.2	14	9.7	32	10.0
40-44 yrs	8	4.5	7	4.8	15	4.7
45-49 yrs	11	6.3	13	9.0	24	7.5
50-54 yrs	11	6.3	18	12.4	29	9.0
55-59 yrs	3	1.7	12	8.3	15	4.7
60-64 yrs	17	9.7	10	6.9	27	8.4
65-69 yrs	10	5.7	6	4.1	16	5.0
70-74 yrs	5	2.8	6	4.1	11	3.4
75-79 yrs	0	0.0	0	0.0	0	0.0
80 + yrs	5	2.8	2	1.4	7	2.2
Total	176	100.0	145	100.0	321	100.0

Table 7

Distribution of cases by districts and sex							
S.N.	Districts	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
1	Arghakachi	4	2.3	3	2.1	7	2.2
2	Baglung	1	0.6	7	4.8	8	2.5
3	Baitadi	0	0.0	1	0.7	1	0.3
4	Banke	2	1.1	3	2.1	5	1.6
5	Bara	2	1.1	0	0.0	2	0.6
6	Bardia	3	1.7	0	0.0	3	0.9
7	Bhaktapur	3	1.7	2	1.4	5	1.6
8	Bhojpur	1	0.6	1	0.7	2	0.6
9	Chitwan	8	4.5	7	4.8	15	4.7
10	Dang	4	2.3	4	2.8	8	2.5
11	Dhading	3	1.7	4	2.8	7	2.2
12	Dhanusha	4	2.3	6	4.1	10	3.1
13	Dilkha	1	0.6	2	1.4	3	0.9
14	Gorkha	3	1.7	1	0.7	4	1.2

15	Gulmi	1	0.6	4	2.8	5	1.6
16	Humla	0	0.0	1	0.7	1	0.3
17	Ilam	2	1.1	0	0.0	2	0.6
18	Jhapa	3	1.7	3	2.1	6	1.9
19	Jumla	1	0.6	0	0.0	1	0.3
20	Kailali	2	1.1	1	0.7	3	0.9
21	Kalikot	0	0.0	1	0.7	1	0.3
22	Kanchanpur	4	2.3	1	0.7	5	1.6
23	Kapilvastu	4	2.3	0	0.0	4	1.2
24	Kaski	7	4.0	7	4.8	14	4.4
25	Kathmandu	18	10.2	13	9.0	31	9.7
26	Kavrepalchowk	6	3.4	2	1.4	8	2.5
27	Khotang	1	0.6	1	0.7	2	0.6
28	Lalitpur	5	2.8	5	3.4	10	3.1
29	Lamjung	0	0.0	1	0.7	1	0.3
30	Mahottari	3	1.7	1	0.7	4	1.2
31	Makwanpur41	4	2.3	3	2.1	7	2.2
32	Morang	9	5.1	5	3.4	14	4.4
33	Myagdi	2	1.1	2	1.4	4	1.2
34	Nawalparasi	2	1.1	7	4.8	9	2.8
35	Nuwakot	3	1.7	1	0.7	4	1.2
36	Okhaldhunga	1	0.6	0	0.0	1	0.3
37	Palpa	2	1.1	2	1.4	4	1.2
38	Panchthar	1	0.6	0	0.0	1	0.3
39	Parbat	2	1.1	3	2.1	5	1.6
40	Parsa	5	2.8	1	0.7	6	1.9
41	Pyuthan	2	1.1	1	0.7	3	0.9
42	Ramechhap	3	1.7	1	0.7	4	1.2
43	Rautahat	2	1.1	0	0.0	2	0.6
44	Rolpa	2	1.1	0	0.0	2	0.6
45	Rukum	2	1.1	0	0.0	2	0.6
46	Rupendehi	4	2.3	5	3.4	9	2.8
47	Salyan	0	0.0	1	0.7	1	0.3
48	Sankhuwasabha	2	1.1	0	0.0	2	0.6
49	Saptari	2	1.1	2	1.4	4	1.2
50	Sarlahi	1	0.6	2	1.4	3	0.9
51	Sindhuli	3	1.7	2	1.4	5	1.6
52	sindhupalchowk	0	0.0	2	1.4	2	0.6
53	Siraha	3	1.7	0	0.0	3	0.9
54	Sunsari	8	4.5	9	6.2	17	5.3
55	Surkhet	1	0.6	2	1.4	3	0.9
56	Syanjha	1	0.6	3	2.1	4	1.2
57	Tanahun	5	2.8	2	1.4	7	2.2
58	Taplejung	1	0.6	1	0.7	2	0.6
59	Terathum	0	0.0	1	0.7	1	0.3
60	Udaypur	2	1.1	3	2.1	5	1.6
61	Unknown	5	2.8	2	1.4	7	2.2
62	Total	176	100.0	145	100.0	321	100.0

Table 8

Distribution of cases by marital status & sex						
Marital status	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Unmarried	11	6.3	4	2.7	15	4.6
Married	95	53.9	81	55.8	176	54.8
Widow	0	0.0	3	2.0	3	0.9
Not available	29	16.4	33	22.7	62	19.4
Not applicable (age <15 yrs.)	41	23.3	24	16.5	65	20.3
Total	176	100.0	145	100.0	321	100.0

Table 9

Distribution of cases by religion status & sex						
Religion	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Hindu	157	89.2	126	86.8	283	88.1
Buddhist	10	5.7	11	7.6	21	6.5
Islam	3	1.7	4	2.7	7	2.1
Others	3	1.7	4	2.7	7	2.1
NA	3	1.7	0	0.0	3	0.9
Total	176	100.0	145	100.0	321	100.0

Table 10

Distribution of cases by education status & sex						
Educational Status	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Literate	73	41.5	46	31.7	119	37.0
Illiterate	41	23.3	48	33.1	89	27.7
Not applicable	11	6.3	2	1.3	13	4.0
Not available	51	28.9	49	33.7	100	31.1
Total	176	100.0	145	2.8	321	3.3

Table 11

Distribution of cases by occupation status & sex						
Occupational Status	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Agriculture	44	25.0	9	6.2	53	16.5
Business	4	2.3	2	1.3	6	1.8
Housework	21	11.9	62	42.2	83	25.8
Office work	9	5.1	5	3.4	14	4.3
Others	23	13.0	6	4.1	29	9.0
Not applicable (age<15 yrs.)	41	23.9	24	16.5	65	20.2
Not available	34	19.3	37	25.5	71	22.1
Total	176	100.0	145	100.0	321	100.0

Table 12

Distribution of cases by basis of diagnosis						
Basis of diagnosis	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Biopsy/Histology	91	51.7	64	44.1	155	48.3
Cytology/Haematology	9	5.1	3	2.1	12	3.7
Not Available	32	18.2	37	25.5	69	21.5
Radiology	43	24.4	41	28.3	84	26.2
Death Certificate	1	0.6	0	0.0	1	0.3
Total	176	100.0	145	100.0	321	100.0

Table 13

Distribution of cases by treatment given and sex						
Treatment given/taking	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Yes	117	66.5	93	64.1	210	65.4
No	8	4.5	3	2.1	11	3.4
Not accepted	1	0.6	0	0.0	1	0.3
Unknown	50	28.4	49	33.8	99	30.8
Total	176	100.0	145	100.0	321	100.0

Table 14

Distribution of cases by treatment type and sex						
Treatment given/taking	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Curative	39	33.3	35	37.6	74	35.2
Palliative	24	20.5	12	12.9	36	17.1
Not available	54	46.2	46	49.5	100	47.6
Total	117	100.0	93	100.0	210	100.0

Table 15

Distribution of cases by treatment received and sex						
Treatment received	Sex				Total	
	Male		Female			
	#	%	#	%	#	%
Surgery	25	21.4	26	28.0	51	24.3
Radiotherapy	24	20.5	26	28.0	50	23.8
Chemotherapy	17	14.5	8	8.6	25	11.9
Supportive	11	9.4	3	3.2	14	6.7
Symptomatic	3	2.6	2	2.2	5	2.4
Surgery & Radiotherapy	14	12.0	18	19.4	32	15.2
Surgery & Chemotherapy	6	5.1	1	1.1	7	3.3
Radiotherapy & Chemotherapy	4	3.4	1	1.1	5	2.4
Surgery, Radiotherapy & Chemotherapy	13	11.1	8	8.6	21	10.0
total	117	100.0	93	100.0	210	100.0

Table 16

Distribution of cases by site and sex for all institution							
ICD-10	Topography	Sex				Total	
		Male		Female			
		#	%	#	%	#	%
C47	Peripheral nerves and autonomic nervous system	2	1.1	5	3.4	7	2.2
C69	Eye and adnexa	7	4.0	4	2.8	11	3.4
C70	Meninges	9	5.1	16	11.0	25	7.8
C71	Brain	137	77.8	108	74.5	245	76.3
C72	Spinal cord, cranial, nerves, and other parts of CNS	11	6.3	4	2.8	15	4.7
C75	Other endocrine glands and related structures	6	3.4	5	3.4	11	3.4
C76	Other and ill-defined sites of head & face	4	2.3	3	2.1	7	2.2
Total		176	100.0	145	100.0	321	100.0



Table
17

Distribution of cases by behavior						
Behavior	Male		Female		Total	
	#	%	#	%	#	%
Carcinoma in situ	1	0.6	0	0	1	0.3
Malignant of primary site	105	59.7	86	59.3	191	59.5
Malignant of secondary site	0	0.0	1	0.7	1	0.3
Malignant but site is unknown	7	4.0	3	2.1	10	3.1
Not available	63	35.8	55	37.9	118	36.8
Total	176	100.0	145	100.0	321	100.0

Table18

Distribution of cases by grade						
Grade	Male		Female		Total	
	#	%	#	%	#	%
Well-differentiated/Grade I	29	16.5	25	17.2	54	16.8
Moderately-differentiated/Grade II	24	13.6	11	7.6	35	10.9
Poorly-Differentiated/Grade III	7	4.0	5	3.4	12	3.7
Undifferentiated/Grade III	11	6.3	9	6.2	20	6.2
Other	7	4.0	4	2.8	11	3.4
Not available	98	55.7	91	62.8	189	58.9
Total	176	100.0	145	100.0	321	100.0

Table
19

Distribution of cases by extention of disease						
Extention of disease	Male		Female		Total	
	#	%	#	%	#	%
In situ	2	1.1	0	0.0	2	0.6
Localized	48	27.3	39	26.9	87	27.1
Direct extension	1	0.6	0	0.0	1	0.3
Direct extension with regional lymph node involvement	2	1.1	1	0.7	3	0.9
Regional lymph node involvement	3	1.7	2	1.4	5	1.6
Distant metastasis	9	5.1	3	2.1	12	3.7
Unknown	7	4.0	10	6.9	17	5.3
Not applicable	8	4.5	9	6.2	17	5.3
Not available	96	54.5	81	55.9	177	55.1
Total	176	100.0	145	100.0	321	100.0

**Table
20**

Detail finding for all reporting institutes by age group and both sex								
Age-group	ICD-10 site							Total
	47	69	70	71	72	75	76	
0-4 yrs	0	5	0	34	2	1	0	42
5-9 yrs	0	0	0	0	0	0	0	0
10-14 yrs	0	1	1	20	1	0	0	23
15-19 yrs	1	1	0	12	0	1	0	15
20-24 yrs	2	0	1	12	1	0	2	18
25-29 yrs	0	0	0	21	3	1	0	25
30-34 yrs	1	1	1	18	1	0	0	22
35-39 yrs	0	0	3	27	1	0	1	32
40-44 yrs	1	0	1	12	1	0	0	15
45-49 yrs	0	1	3	18	0	2	0	24
50-54 yrs	0	1	3	24	0	1	0	29
55-59 yrs	1	0	1	9	2	2	0	15
60-64 yrs	1	0	5	17	1	3	0	27
65-69 yrs	0	0	4	7	2	0	3	16
70-74 yrs	0	0	2	9	0	0	0	11
75-79 yrs	0	0	0	0	0	0	0	0
80 + yrs	0	1	0	5	0	0	1	7
Total	7	11	25	245	15	11	7	321

Table 21

Detail finding by reporting institution and age group												
Age-group	Reporting institute											Total
	BPK MCH	BPKI HS	BCH	BH	TU TH	KCH	MT H	SB H	CS H	PA HS	N M C	
0-4 yrs	20	2	7	0	3	6	4	0	0	0	0	42
5-9 yrs	0	0	0	0	0	0	0	0	0	0	0	0
10-14 yrs	17	1	1	1	1	1	0	0	1	0	0	23
15-19 yrs	6	2	3	0	2	0	1	0	0	1	0	15
20-24 yrs	8	0	6	0	3	0	1	0	0	0	0	18
25-29 yrs	11	0	9	1	2	0	2	0	0	0	0	25
30-34 yrs	12	2	3	1	1	0	2	0	1	0	0	22
35-39 yrs	10	0	11	2	4	0	5	0	0	0	0	32
40-44 yrs	7	0	4	2	2	0	0	0	0	0	0	15
45-49 yrs	14	0	6	2	1	0	1	0	0	0	0	24
50-54 yrs	15	1	7	2	3	0	1	0	0	0	0	29
55-59 yrs	8	1	3	0	2	0	0	0	0	0	1	15
60-64 yrs	13	1	4	4	3	0	0	1	1	0	0	27

65-69 yrs	7	1	3	2	2	0	1	0	0	0	0	16
70-74 yrs	5	0	3	2	1	0	0	0	0	0	0	11
75-79 yrs	0	0	0	0	0	0	0	0	0	0	0	0
80 + yrs	4	0	1	1	1	0	0	0	0	0	0	7
Total	157	11	71	20	31	7	18	1	3	1	1	32

Table 22

Detail finding by reporting institution and ICD-10													
ICD-10	Topography	Member Hospitals											Total
		BPK MCH	BPKI HS	BCH	BH	TU TH	KCH	MTH	SBH	CSH	PAHS	NMC	
C47	Peripheral nerves and autonomic nervous system	2	3	0	0	2	0	0	0	0	0	0	7
C69	Eye and adnexa	2	3	5	0	0	1	0	0	0	0	0	11
C70	Meninges	9	1	6	5	3	0	0	0	0	0	1	25
C71	Brain	134	4	55	13	12	6	17	0	3	1	0	245
C72	Spinal cord, cranial, nerves, and other parts of CNS	8	0	4	1	1	0	1	0	0	0	0	15
C75	Other endocrine glands and related structures	1	0	0	1	8	0	0	1	0	0	0	11
C76	Other and ill-defined sites	1	0	1	0	5	0	0	0	0	0	0	7
	Total	157	11	71	20	31	7	18	1	3	1	1	32

Table 23

Distribution of cases by basis of dignosis method and reporting institution												
Reportin g institutio n	Biopsy/Histolog y		Cytology/Haematolog y		Radiology		Death Certificat e		Not Available		Total	
	#	%	#	%	#	%	#	%	#	%	#	%
BPKMCH	69	44.5	9	75.0	68	81.0	1	100.0	10	14.5	157	48.9
BPKIHS	8	5.2	2	16.7	1	1.2	0	0.0	0	0.0	11	3.4
BCH	64	41.3	0	0.0	7	8.3	0	0.0	0	0.0	71	22.1
BH	9	5.8	0	0.0	1	1.2	0	0.0	10	14.5	20	6.2
TUTH	0	0.0	0	0.0	0	0.0	0	0.0	31	44.9	31	9.7
KCH	0	0.0	0	0.0	0	0.0	0	0.0	7	10.1	7	2.2
MTH	5	3.2	0	0.0	7	8.3	0	0.0	6	8.7	18	5.6
SBH	0	0.0	1	8.3	0	0.0	0	0.0	0	0.0	1	0.3
CSH	0	0.0	0	0.0	0	0.0	0	0.0	3	4.3	3	0.9
PAHS	0	0.0	0	0.0	0	0.0	0	0.0	1	1.4	1	0.3
NMC	0	0.0	0	0.0	0	0.0	0	0.0	1	1.4	1	0.3
Total	155	100.0	12	100.0	84	100.0	1	100.0	69	100.0	321	100.0



Table 24

Population based malignant NS neoplasm by site and sex for 2013				
ICD-10	Topography	2013		
		Sex		Total
		Male	Female	
C 71	Brain	33	37	70
C 70	Meninges	3	6	9
C 69	Eye & adnexa	0	5	5
C 72	Spinal cord & other parts of CNS	3	2	5
C 75	Other endocrine glands & related structure	1	0	1
C 47	Peripheral nerves & autonomic nervous system	0	0	0
C76	Other ill defined site of head, face & scalp	NA	NA	
	Total	1113	1356	2469

Table 25

Population based malignant NS neoplasm by site and sex for 2014				
ICD-10	Topography	2014		
		Sex		Total
		Male	Female	
C 71	Brain	39	34	73
C 69	Eye & adnexa	14	9	23
C72	Spinal cord & other parts of CNS	2	3	5
C 70	Meninges	0	4	4
C 47	Peripheral nerves & autonomic nervous system	1	1	2
C 75	Other endocrine glands & related structures	0	2	2
C76	Other ill defined site of head, face & scalp	NA	NA	
Total		1088	1532	2620

Table 26

Population based malignant NS neoplasm by site and sex for 2015					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	0	1	1	0.0
C69	Eye and adnexa	7	1	8	0.3
C70	Meninges	1	3	4	0.1
C71	Brain	51	45	96	3.3
C72	Spinal cord, cranial, nerves, and other parts of CNS	3	2	5	0.2
C75	Other endocrine glands and related structures	1	0	1	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	
	Total	1271	1679	2950	100.0

Table 27

Hospital based malignant NS neoplasm by site and sex for 2003					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	1	0	1	0.0
C69	Eye and adnexa	24	13	37	1.1
C70	Meninges	1	0	1	0.0
C71	Brain	20	10	30	0.9
C72	Spinal cord, cranial, nerves, and other parts of CNS	3	0	3	0.0
C75	Other endocrine glands and related structures	1	0	1	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	1488	1763	3251	100.0

Table 28

Hospital based malignant NS neoplasm by site and sex for 2004					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	0	1	1	0.2
C69	Eye and adnexa	9	9	18	0.4
C70	Meninges	1	1	2	20.0
C71	Brain	48	27	75	1.7
C72	Spinal cord, cranial, nerves, and other parts of CNS	2	1	3	30.0
C75	Other endocrine glands and related structures	0	1	1	0.0
C76	Other ill defined site of head, face & scalp	0	0	0	0
	Total	2030	2117	4201	100.0

Table 29

Hospital based malignant NS neoplasm by site and sex for 2005					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	3	0	3	0.0
C69	Eye and adnexa	16	23	39	0.8
C70	Meninges	0	1	1	0.0
C71	Brain	42	27	69	1.5
C72	Spinal cord, cranial, nerves, and other parts of CNS	2	1	3	0.0
C75	Other endocrine glands and related structures	1	1	2	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	2057	2340	4397	100.0

Table 30

Hospital based malignant NS neoplasm by site and sex for 2006					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	1	1	2	0.0
C69	Eye and adnexa	12	8	20	0.8
C70	Meninges	4	1	5	0.1
C71	Brain	55	6	61	1.2
C72	Spinal cord, cranial, nerves, and other parts of CNS	0	1	1	0.0
C75	Other endocrine glands and related structures	1	2	3	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	2325	2583	4908	100.0

Table 31

Hospital based malignant NS neoplasm by site and sex for 2007					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	0	1	1	0.0
C69	Eye and adnexa	3	4	7	0.01
C70	Meninges	NA	NA	NA	NA
C71	Brain	5	9	14	0.2
C72	Spinal cord, cranial, nerves, and other parts of CNS	NA	NA	NA	NA
C75	Other endocrine glands and related structures	NA	NA	NA	NA
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	2758	3277	6035	100.0

Table 32

Hospital based malignant NS neoplasm by site and sex for 2008					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	3	7	10	0.2
C69	Eye and adnexa	34	30	64	1.1
C70	Meninges	0	1	1	0.0
C71	Brain	54	49	103	1.7
C72	Spinal cord, cranial, nerves, and other parts of CNS	2	4	6	0.1
C75	Other endocrine glands and related structures	0	2	2	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	2702	3247	5949	100.0

Table 33

Hospital based malignant NS neoplasm by site and sex for 2009					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	20	15	35	0.56
C69	Eye and adnexa	28	15	43	0.6
C70	Meninges	4	2	6	0.0
C71	Brain	81	44	125	2.0
C72	Spinal cord, cranial, nerves, and other parts of CNS	3	2	5	0.0
C75	Other endocrine glands and related structures	1	1	2	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	2970	3229	6199	100.0

Table 34

Hospital based malignant NS neoplasm by site and sex for 2010					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	0	1	0.0	0.0
C69	Eye and adnexa	24	28	52	0.8
C70	Meninges	10	19	29	0.4
C71	Brain	94	53	147	2.2
C72	Spinal cord, cranial, nerves, and other parts of CNS	5	3	8	0.1
C75	Other endocrine glands and related structures	2	3	5	0.1
C76	Other ill defined site of head, face & scalp	NA	NA	NA	0.0
	Total	3192	3581	6773	100.0

Table 35

Hospital based malignant NS neoplasm by site and sex for 2011					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	3	6	9	0.1
C69	Eye and adnexa	29	33	62	0.8
C70	Meninges	4	1	5	0.0
C71	Brain	74	53	127	0.1
C72	Spinal cord, cranial, nerves, and other parts of CNS	6	1	7	7.9
C75	Other endocrine glands and related structures	4	2	6	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	3295	3793	7088	100.0

Table 36

Hospital based malignant NS neoplasm by site and sex for 2012					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	2	4	6	0.0
C69	Eye and adnexa	22	16	38	0.5
C70	Meninges	6	6	12	0.6
C71	Brain	104	78	182	2.5
C72	Spinal cord, cranial, nerves, and other parts of CNS	3	2	5	0.0
C75	Other endocrine glands and related structures	5	2	7	NA
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	3291	9921	7212	100.0

Table 37

Hospital based malignant NS neoplasm by site and sex for 2013					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	2	2	4	0.0
C69	Eye and adnexa	18	23	41	0.4
C70	Meninges	4	13	17	2.4
C71	Brain	118	99	217	24.8
C72	Spinal cord, cranial, nerves, and other parts of CNS	7	9	16	0.1
C75	Other endocrine glands and related structures	2	3	5	0.0
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	4011	4718	8729	100.0

Table 38

Hospital based malignant NS neoplasm by site and sex for 2014					
ICD-10	Topography	Sex		Total	
		Male	Female	#	%
C47	Peripheral nerves and autonomic nervous system	3	2	5	0.2
C69	Eye and adnexa	56	50	106	1.2
C70	Meninges	10	13	23	0.3
C71	Brain	119	83	202	2.2
C72	Spinal cord, cranial, nerves, and other parts of CNS	4	10	14	0.1
C75	Other endocrine glands and related structures	1	5	6	0.6
C76	Other ill defined site of head, face & scalp	NA	NA	NA	NA
	Total	4014	5022	9036	100.0

Discussion

In this retrospective study of malignant nervous system neoplasm, presently incorporating twelve hospitals of the nation where cancer being diagnosed and treated. Many NS tumor treating hospital are missing. So NS tumor registry data coverage may not represent whole country, only reflect the NS tumor burden of co-action hospitals only. Whereas, it can be assumed as a near most tumor burden of Nepal

The total of 324 malignant nervous system neoplasm cases were collected in 2015 from major cancer treating hospitals of the nation. Repeated cases were verified by name, age, sex, address, topography and morphology and deleted from data base whereas, n=3 non- Nepalese cases excluded and net 321 cases were coded as per ICD-O 3rd and ICD-10 published by IARC/WHO. The mean age of the patient was 37 years. Malignant brain tumor C 71 were 245 (76.3%) the first leading cancer site followed by C70 cancer of meningis 25 (7.8%) and C72 spinal cord, cranial nerves and other parts of CNS 15 (4.7%). Whereas, C75 other endocrine glands & related structures and C 69 eye & adnexa with equal proportion 11 (3.4%) and similarly C47 peripheral nerves and autonomic nervous system and C76 other and ill - defined sites of head & face with same proportion 7 (2.2%).

Conclusion

A national level data base is very important for the study, plan and manage the nervous system tumor. We are presently incorporating 12 hospitals where cancer is being treated. Maney nervous system tumor treating hospitals and departments are missing: therefore presently we can not give a national scenario of nervous system tumors. We need a brain tumor or nervous system tumor registry incorporating all the neuro hospitals, neurological and nuro surgical department operating.

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References

- ❖ *"Adult Central Nervous System Tumors Treatment"*. National Cancer Institute. 1980-01-01. Retrieved 2019-06-28 <https://www.cancer.gov/types/brain/patient/adult-brain-treatment-pdq>
- ❖ International Classification of Disease for oncology, WHO/IARC 3rd Edition, Lyon France , 2000
- ❖ Krishna Prasad Subedi et al. Population Based Cancer Incidence in 15 district of three Geographical Region, Mountain, hills and Tarai for 2013-14 in Nepal, International Journal of Scientific Research in Science and Technology, Volume 6/ Issue 3/5379
- ❖ Krishna Prasad Subedi et al. Descriptive Analysis of Total New Cancer Cases in Nepal for 2013-2014, International Journal of Research (IJR), Volume VIII, Issue VI, June 2019.
- ❖ Krishna Prasad Subedi et al. Population Based Cancer Incidence in Various Geographical Region of Nepal for 2015, International Journal of Current Research, Vol. 11, Issue, 03, pp.2501-2507, March, 2019.
- ❖ Krishna Prasad Subedi et al. National Scenario of Malignant Neoplasm Burden in Nepal for 2015, International Journal of Recent Academic Research, Vol. 01. Issue 02, pp.052-056.May. 2019.
- ❖ Krishna Prasad Subedi et al. Comparative Analysis of Cancer Incidence by dual Cancer Registry in Nepal–2015, International Journal of Science and Research (IJSR), Volume 8 Issue 6, June 2019.
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2003, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2004, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2005, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, October 2007
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2006, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, October 2009
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2007, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, Jun 2012

- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2008, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, September 2012
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2009, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, December 2012
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2010, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, July 2013
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2011, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, Decembe 2013
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2012, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, February 2014
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2013, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, Jun 2015.
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2014, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, July 2016.
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2015, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, Jun 2018.
- ❖ National Cancer Registry Programme, Report of Population Based Cancer Registry 2013 - 2014, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, July, 2016.
- ❖ National Cancer Registry Programme, Report of Population Based Cancer Registry 2015, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, Jun 2018.
- ❖ National Cancer Registry Programme, Report of Population Based Cancer Registry 2016, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, July 2020.
- ❖ National Cancer Registry Programme, Report of Hospital Based National Cancer Registry 2016, B.P. Koirala Memorial Cancer Hospital Bharatpur, Chitwan, Nepal, July 2020.