CASE STUDY

Pattern of Cancer in Nepal from 2003 to 2011

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Abstract

Cancer is global burden of disease in developed and developing countries. It is one of the main causes of death. The environmental factor and life styles are major causes of cancer.

This hospital based retrospective study was carried out using data retrieved from the register maintained at seven cancer centers. The most common basis of diagnosis were microscopic (histopathological and cytopathological examination). The diagnosis was also based on clinical examination, radiological examination, endoscopy, biochemical and immunological tests.

Most of the cancer cases were diagnosed at BPKMCH (23908) followed by BPKIHS (9668) and BH (5959) and few cases from KCH (518) in 2003 to 2011. The total number of cancer cases were increasing from 2003 to 2011 and it become double in 2011.. Out of 75 district of Nepal, more number of cancer cases was found in Kathmandu, Sunsari, Morang, Chitwan, Lalitpur, Jhapa, Kaski, Nawalparasi, Rupendehi and Kavrepalchowk in 2010. Similarly, in 2011 more number of cancer cases was found in Kathmandu, Morang, Jhapa, Sunsari, Chitwan, Lalitpur, Rupendehi, Kaski, Saptari, Bhaktapur. Lung cancer was the common cancer and similarly, other prevalent cancers were cervical, breast, stomach, ovarian and colo-rectum cancer in 2003 to 2011. The common cancers were lung, cervical, breast, stomach, ovarian and colo-rectum. The number of patients is increasing, which may be due to change in life style and lack of education.

Key words: Cancer, Nepal, 2003-2011, Kathmandu,

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Introduction

Cancer is characterized by uncontrolled growth and spread of abnormal cells with multi-factorial etiology [1]. It is one of the most dreaded non-communicable diseases that have become the important contributor to the global burden of disease [2]. The causes of cancer is not only genetic factor, which contribute 5-10%, while environmental factor and life styles cover 90-95% [3,4]. The lifestyle factors include cigarette smoking, diet (fried foods, red meat), alcohol, sun exposure, environmental pollutants, infections, stress, obesity, and physical inactivity [5,6]

In 2012, new cancer cases were 14.1 million and with 8.2 million deaths. The lung cancer was the most common cancer 16.7% of all new cases in men and breast cancer 25.2% in women [7]. According to estimates from the International Agency for Research on Cancer (IARC), the global burden is expected to grow to 21.4 million new cancer cases and 13.2 million cancer deaths by 2030. [8]

In developed countries, most common diagnosed cancers were prostate, lung and bronchus, and colorectal among men while breast, colorectal, and lung among women. Similarly, lung, stomach, and liver cancer in men while breast, cervix uteri, and lung in women in developing countries [9]. Nepal is a developing country where cancer cases are increasing day by day. The aim of this study is to see the pattern of cancer cases from 2003 to 2011 in Nepalese people.

Materials and Methods

This hospital based retrospective study was carried out using data retrieved from the register maintained at seven cancer centers of Nepal from 2003 to 2011. The cancer centers were B.P. Koirala Memorial Cancer Hospital (BPKMCH) Bharatpur, Chitwan, Bhaktapur Cancer Hospital (BCH) Bhaktpur, Bir Hospital (BH) Kathmandu, TU Teaching Hospital (TUTH) Kathmandu, Kanti Children's Hospital (KCH) Kathmandu, B.P.Koirala Institute of Health Sciences (BPKIHS) Dharan and Manipal Teaching Hospital (MTH), Pokhara, Nepal. The most common basis of diagnosis were microscopic (histopathological and cytopathological examination). The diagnosis was also based on clinical examination, radiological

examination, endoscopy, biochemical and immunological tests. The collected variables are age, sex, occupation, religion, ethnicity, region of residence and type of cancer. The data were analysed using Excel 2007.

Results

Most of the cancer cases were diagnosed at BPKMCH (23908) followed by BPKIHS (9668) and BH (5959) and few cases from KCH (518) in 2003 to 2011 (**Figure 1**).

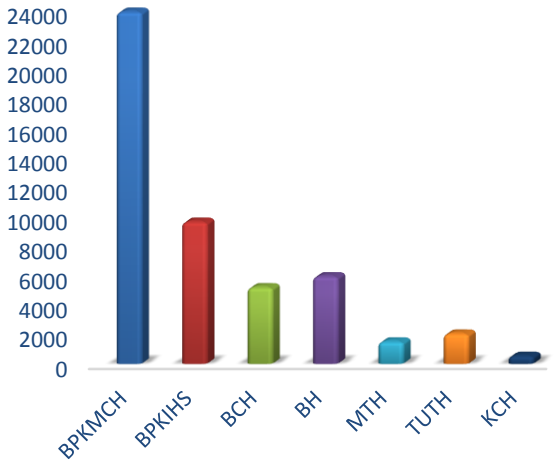

Figure 1: The number of total cancer between 2003 to 2011 from seven cancer reporting institute of Nepal.

The total number of cancer cases were increasing from 2003 to 2011 and it became double in 2011 (**Figure 2**).

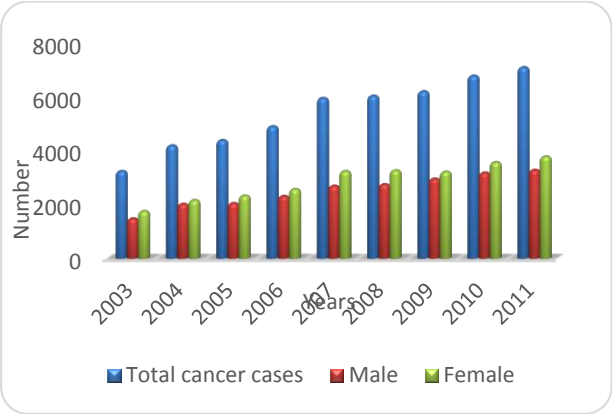

Figure 2: This data represents total number of cancer cases and sex wise distribution of cancer from 2003 to 2011.

Cancer cases were more in female than male in all the years (T**able 2**). Most of the cancer patients were married (**Table 3**) and Hindu religion followed by Buddhist religion (table 4). More cancer patients were illiterate followed by literate (**Table 5**). Agriculture was main occupation of most cancer patients followed by housework (table 6). Most of cancer cases were prevalent in age group 40-75 years. Less number of cancer cases was found in age group below 15 years (**Table 7**). Biopsy and histology were the major method for the diagnosis of cancer cases followed by cytology and haematology. The clinical examination and biochemical/immunological test were help to identified only few cancer cases. (**Table 8**). Out of 75 district of Nepal, more number of cancer cases was found in Kathmandu, Sunsari, Morang, Chitwan, Lalitpur, Jhapa, Kaski, Nawalparasi, Rupendehi and Kavrepalchowk in 2010 (figure 4). Similarly, in 2011 more number of cancer cases was found in Kathmandu, Morang, Jhapa, Sunsari, Chitwan, Lalitpur, Rupendehi, Kaski, Saptari, Bhaktapur (figure 5). Lung cancer was the common cancer and similarly, other prevalent cancers were cervical, breast, stomach, ovarian and colo-rectum cancer in 2003 to 2011(figure 5).

Discussion

Nepal is a developing country and divided into beautiful three region terai, mountain and Himalayan. People of different region have their own language, religion, festival and source of income to run the family. This study reveals, diagnosed cancer cases were mostly from terai region and most of them were working in field. The second occupation was housework as cancer cases diagnosed high in female compare to male. More than half of the cancer cases were illiterate. Most of cancer cases were prevalent in age group 40-75 years. Less number of cancer cases was found in age group below 15 years. The study conducted in india in 1994 and 1955 showed prevalence of cancer in same age group [11]. It may be due to decreases in immune system, iliteracy and exposure to cance causing agents in environmet. The most diagnosed cancer cases were hindus followed by buddhist, Islam and Christians. This is due to high number of population were Hindus in Nepal as we know Nepal were Hindu country in world.

In Nepal, among all diagnosed cancer cases, the common cancer were lung, cervical, breast, stomach, ovarian and colo-rectum [12]. The report by WHO showed common cancers was lung, breast and colo-rectum in the world [13]. Some studies showed similar finding for these common cancers

[13, 14, 15]. The lung cancer was estimated a total of 239,320 new cases in US in 2010 [16]. The lung cancer is due to maximum use of tobacco which can be seen mainly in 25-60 yrs. age group in Nepal. Tobacco smoking [16] and tobacco uses were higher in mid-western, rural, far western and mountainous areas of Nepal [17].

Conclusion

The cancer is becoming a major problem in Nepal with the number rising continuously. All this may be due to environmental factors and life style changes i.e. tobacco use, food habits, alcohol use and physical inactivity.

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Table 1: Total cancer cases from seven reporting institute in 2003 to 2011

Name of Hospital	2003	2004	2005	2006	2007	2008	2009	2010	2011
BPKMCH	1869 (57.5%)	1815 (43.2%)	2154 (49.0%)	2564 (52.2%)	3261 (54.03%)	2936 (49.4%)	2772 (44.1%)	3216 (47.5%)	3320 (46.8%)
BCH	328 (10.0%)	952 (22.7%)	1008 (22.9%)	1086 (22.1%)	1138 (18.85%)	1253 (21.1%)	1289 (20.8%)	1253 (18.5%)	1361 (19.2%)
BPKIHS	418 (12.9%)	457 (10.9%)	702 (16.0%)	613 (12.5%)	640 (10.6%)	655 (11.0%)	660 (10.6%)	553 (8.2%)	512 (7.2%)
BH	127 (4.0%)	385 (9.2%)	206 (4.7%)	350 (7.1%)	696 (11.53%)	798 (13.4%)	1228 (19.8%)	1173 (17.3%)	1005 (14.2%)
MTH	215 (6.6%)	307 (7.3%)	162 (3.7%0	172 (3.5%)	192 (3.18%)	153 (2.6%)	79 (1.3%)	77 (1.1%)	160 (2.1%)
TUTH	248 (7.6%)	190 (4.5%)	134 (3.0%)	89 (1.8%)	68 (1.12%)	91 (1.5%)	188 (3.0%)	392 (5.9%)	648 (9.1%)
KCH	46 (1.4%)	95 (2.3%)	31 (0.7%)	34 (0.7%)	40 (0.6%)	63 (1.1%)	23 (0.4%)	104 (1.1%)	82 (1.2%)
Total	3251	4201	4397	4908	6035	5949	6199	6773	7088

Table 2: Distribution of cancer cases based on marital status in 2010 to 2011

Marital status	2010			2011		
	Male	Female	Total	Male	Female	Total
Unmarried	132	111	243	127	92	219
Married	2678	3084	5762	2773	3243	6016
Widow	68	172	240	70	199	269
Divorced	3	4	7	1	4	5
Separated	5	1	6	4	3	7
Not Available	106	107	213	131	135	266
Not Applicable	1	0	1	189	117	306
Total	2993	3479	6472	3295	3793	7088

Table 3: Distribution of cancer cases based on the Religion in 2010 to 2011

Religion	2010			2011		
	Male	Female	Total	Male	Female	Total
Hindu	2735	3057	5792	2683	3093	5776
Buddhist	217	254	471	301	358	659
Islam	51	53	104	57	59	116
Christian	16	32	48	24	26	50
Others	63	85	148	160	191	351
Not Available	110	100	210	70	66	136
Total	3192	3581	6773	3295	3793	7088

Table 4: Distribution of cancer cases based on the education status in 2010 to 2011

Education	2010			2011		
	Male	Female	Total	Male	Female	Total
Literate	1346	1118	2464	1342	1068	2410
Illiterate	1291	1936	3227	1494	2233	3727
Not Applicable	25	17	42	397	466	863
Not Available	476	479	955	62	26	88
Total	3138	3550	6688	3295	3793	7088

Table 5: Distribution of cancer cases based on occupational status in 2010 to 2011

Occupation	2010			2011		
	Male	Female	Total	Male	Female	Total
Agriculture	1769	1154	2923	1757	1082	2839
Business	172	83	255	202	182	384
Housework	206	1790	1996	265	1895	2160
Office Work	256	77	333	251	105	356
Others	291	158	449	328	150	478
Not Applicable	8	5	13	303	262	565
Not Available	441	363	804	189	117	306
Total	2993	3479	6773	3295	3793	7088

Table 6: Distribution of cancer cases based on the age group in 2010 to 2011

Age Group (Years)	2010			2011		
	Male	Female	Total	Male	Female	Total
0-4	54	31	85	62	26	88
5-9	66	39	105	52	41	93
10-14	79	32	111	75	50	125
15-19	70	75	145	74	63	137
20-24	74	96	170	93	84	177
25-29	77	117	194	78	120	198
30-34	91	159	250	103	155	258
35-39	128	241	369	141	251	392
40-44	154	328	482	205	380	585
45-49	228	439	667	234	439	673
50-54	293	491	784	295	464	759
55-59	319	362	681	404	474	878
60-64	459	414	873	426	449	875
65-69	427	304	731	381	359	740
70-74	351	228	579	333	232	565
75-79	193	132	325	210	138	348
80 +	129	93	222	129	68	197
Total	**3192**	**3581**	**6773**	**3295**	**3793**	**7088**

Table 7: Distribution of cancer cases based on type of diagnosis in 2010 to 2011

	2010			2011		
	Male	Female	Total	Male	Female	Total
Clinical Examination	3	1	4	23	25	48
Endoscopy	36	12	48	37	17	54
Biopsy/Histology	1699	2151	3850	1648	2296	3944
Cytology/Haematology	812	834	1646	860	816	1676
Exploratory Surgery	2	2	4	0	0	0
Biochemical/Immunological test	0	7	7	1	15	16
Radiology	239	225	464	300	274	574
Death certificate	2	3	5	3	6	9
Not available	399	346		423	344	767
Total	3192	3581	6773	3295	3793	7088

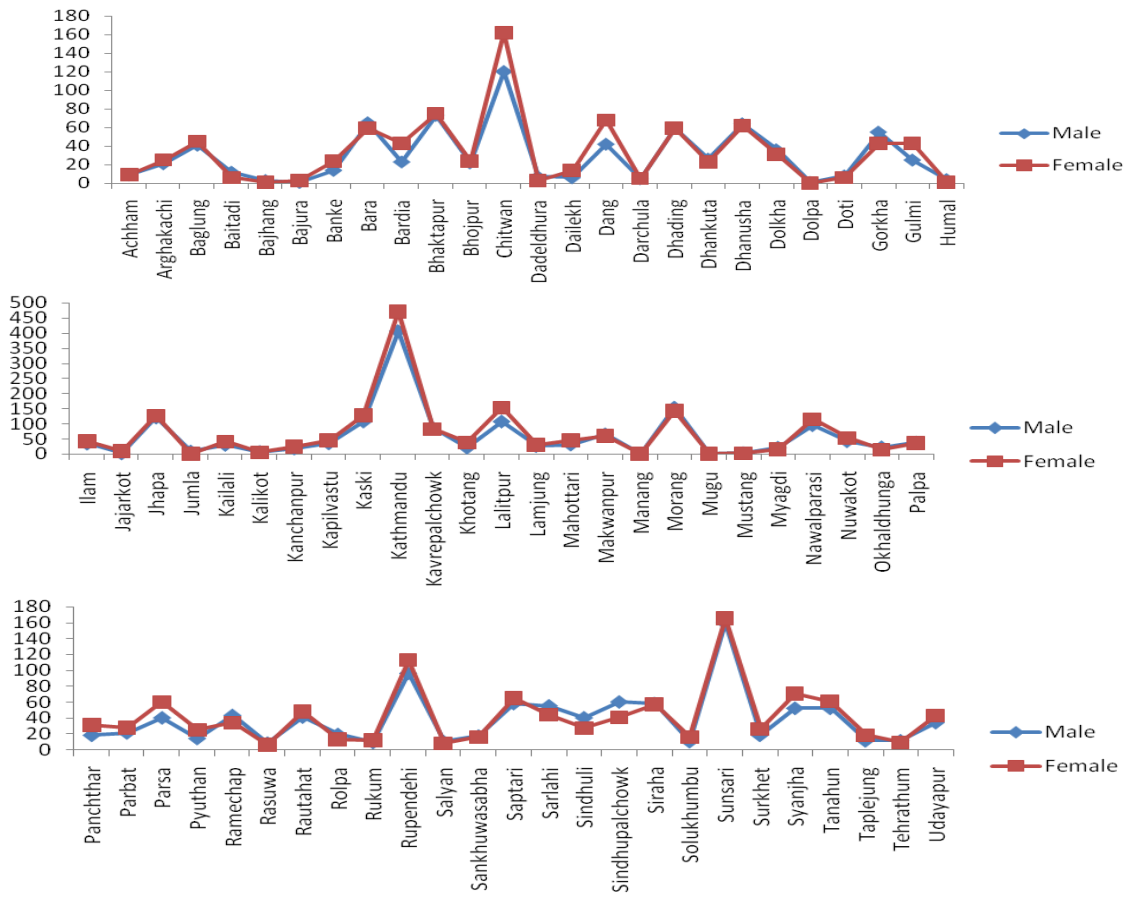

Figure 3: Showed the sex wise distribution of cancer cases in different district of Nepal in 2010

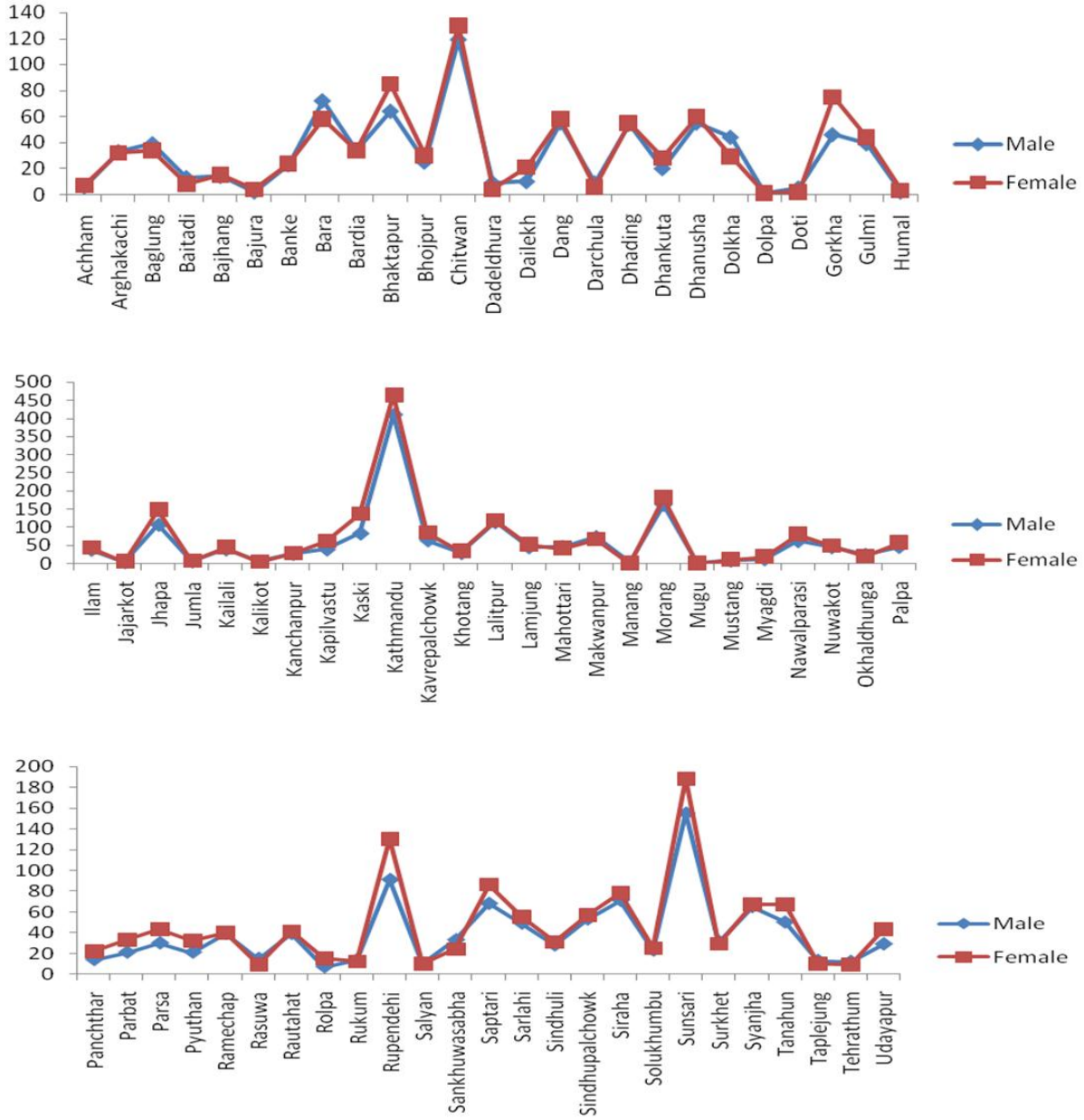

Figure 4: Showed the sex wise distribution of cancer cases in different district of Nepal in 2011