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An epidemiological study of malignancies in Jammu province, India: A retrospective study (1999-2003)

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ABSTRACT

Research Question: -To Study the magnitude, pattern and inter district variation of Malignancies in different regions of Jammu Province from January 1999 to Dec. 2003. Setting : - Entire Population of Jammu Province. Study Design: - A Hospital based retrospective study. Methodology: -The study was carried out retrospectively from January 1999 to December 2003. The year wise data was collected from the medical case files maintained year wise in the Department of Radiotherapy and medical record section of the associated hospitals. All the new cases from Jammu province reporting for the first time in the five year time period were included. Only the primary tumors were recorded. In case of multiple primary cancer in same person they were all counted as new. Results: : - The total of 4507 new cases from Jammu province were registered in five year time period. Maximum cases 2541 (56.37%) were from Jammu District. Among males from Kathua, Jammu, Doda , Udhampur and Rajouri Respiratory system and Intrathoracic organs were at the top (40.40%, 37.47%, 37.25%, 36.97% and 33.74% resp.). Female Genital organs followed by Breast cancer were the leading site in female patients from Kathua and Jammu District (41.31% and 16.90% for Kathua and 33.39% and 18.41% for Jammu. Conclusion : -The leading Site of Malignancies among Male and Females varied in different districts of Jammu province. This could be attributed to various cultural dietary and environmental factors.

Key Words: -Age specific incidence rate, ten leading sites of cancer, Minimum incidence rate.

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Introduction: Cancer (Kark- Roga) is a very old disease which is known to have existed since prehistoric times. Traces of cancer have been found in the bones of Egyptian Mummies embalmed 5000 years ago. Cancer has become an epidemic disease of modern times.

Cancer afflicts all communities worldwide, approximately 10 million people are diagnosed with cancer and more than 6 million die of the disease every year[1]. About 22.4 million persons were living with cancer in the year 2000[2]. In terms of incidence, the most common cancers worldwide are lung cancer (12.3 % of all cases), breast cancer (10.4%) and colorectal cancer (9.4%)[3].

In India there are approximately 2 – 2.5 million cases of cancer at any given point of time, with around 7 – 9 lac new cases being detected each year. The number of cancer cases among males is estimated as 3.9 lac and among females as 4.3 lac[4]. In India cancer of mouth / oropharynx, oesohagus, stomach and lower respiratory tract are common in males and cancers of cervix, breast, mouth / oropharynx and oesophagus are common in females[5].

There is a wide variation in the distribution of cancer throughout the world. These variations are attributed to multiple factors such as environmental factors, food habits, life style, genetic factors etc. Very few studies have described the regional variation of cancer within the Jammu province hence this study

was carried out to find out the magnitude, pattern and inter district variation of cancer in Jammu province so as to evolve the strategies for effective implementation of cancer control programme.

Materials And Methods: The state of Jammu and Kashmir constitutes of 2 provinces, on the basis of topography, ethnicity, language and geographical conditions. The Province of Jammu has 6 districts viz Rajouri, Poonch, Kathua, Jammu Udhampur & Doda Scattered in an area of 26,293 Sqkm[6] . Government Medical College Jammu being the apex institution caters to the entire population of Jammu Province and also the population of the adjoining states. The Study was carried out retrospectively from Jan 1999 to Dec. 2003. After getting clearance from Institutional Ethical Committee, the year wise data was collected from the medical case files maintained year wise in the Department of Radiotherapy and medical records section of the associated hospitals, the data included variables such as age, sex, religion, district, type of malignancy and histological findings if available. Only the residents of various district of Jammu Province were included in the study and residents from other states and Kashmir Province were excluded. The following methods of diagnosis were accepted: Microscopic confirmation, evidence obtained at operations, X-ray diagnosis, Clinical diagnosis.

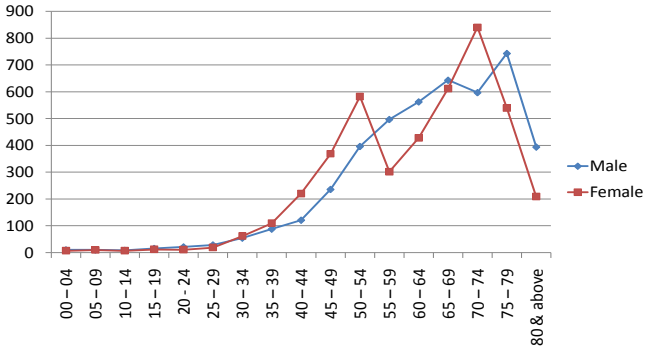
There were some limitations to the retrospective study as the information about socioeconomic status, dietary habits, environmental factors and other risk factors were not prerecorded. Care was taken that no entry in duplicated.

In a developing country where a large hospital caters to the entire population and provides all diagnostic and treatment services for cancer in the area, the data collected can be utilized to calculate minimum incidence figures, this term is used because there is likely to be under reporting[7]. All new cases reporting for the first time in the five year time period from January 1999 to Dec.2003 from among permanent residents of Jammu Province were included in the study, only the Primary tumors were recorded and not the secondaries and metastatic lesions. In case of Multiple Primary Cancer in the same person, they were all counted as new. ICD-O, a dual classification was used for coding[8].

Statistical Analysis : Data was analyzed with the help of computer software MS-Excel for windows. Frequencies and percentages were calculated for computing age adjusted incidence rates employing the world standardized population as suggested by international union against cancer[9].

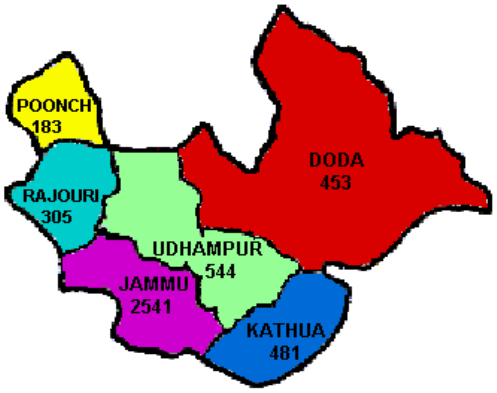
Observations: The total population of Jammu province is 44,30,191 lac with 23,54,454 males and 20,75,737 females[6.] Jammu District has a maximum population of 15,88,772 followed by Udhampur District with a population of 7,43,509. Doda district is the largest and covers an area of 11,691 Sq Km (Census 2001, J&K) Male female ratio is 1.13:1. During the five years period from 1999 to 2003, 4932 patients were registered and 4507 (91.38%) were analyzed 8.62% patients were not included as they belonged to either Kashmir Province or other neighboring States. The number of cases gradually increased every year from 815 cases in 1999 to 985 cases in 2003. In all the years the percentage of male patients was more as compared to that of females the male/female ratio was 1.16:1 in 1999 and 1.24:1 in 2003 . By relating the new cancer cases to the estimated population of Jammu Province as given by census 2001, Minimum crude incidence rate for 5 years was 101.73 per lac and minimum age adjusted rate was 145.57 per lac. Crude incidence rate per lac for 5 years, for male (106.56) was found to be more than females (96.25) .When cancer incidence rate was adjusted to age distribution of the world standard population taken as a whole, age adjusted rates were found to be lower in males (142.77) than in females (152.17) . The age specific incidence rates for all cancer sites by sex were found to increase with age (fig.I).

Fig I :Age Specific Incidence Rate for all cancer sites by sex



Out of 4507 cases, 2541 (56.37%) cases were from Jammu district, 544 (12.07%) patients from Udhampur district, 481 (10.67%) patients from Kathua district, 453 (10.05%) cases from Doda district, 305 (6.76%) patients from Rajouri district and 183 (4.06%) patients from Poonch district.(fig II)

Fig. II : Total number of cancer cases from different districts of Jammu province for the year 1999 to 2003.



The relative frequency of patents from six districts of Jammu Province was more or less similar over the year (figIII).

Fig IV depicts ten leading sites of cancer among males and females from 1999 to 2003 in all the districts combined. Respiratory system and Intrathoracic organs were at the top for Male patients from Kathua Jammu Doda Udhampur and Rajouri (40.40% , 37.47% ,37.25% , 36.97% and 33.74% resp).

Whereas for male patients hailing from Poonch, Cancer of Digestive organs was the leading site(30.19%) (Table I) Female genital organs followed by breast cancer were the leading sites in female patients from Kathua & Jammu. In cases from Poonch and Rajouri cancer of Digestive organs (31.17% & 26.06% resp.) was on the top (Table II).

Fig. III: Cancer patients from various districts of Jammu province (1999 – 2003)

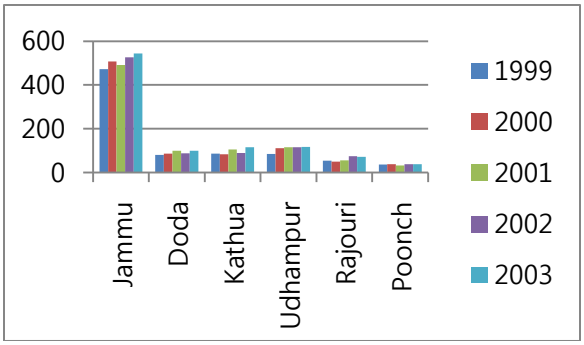
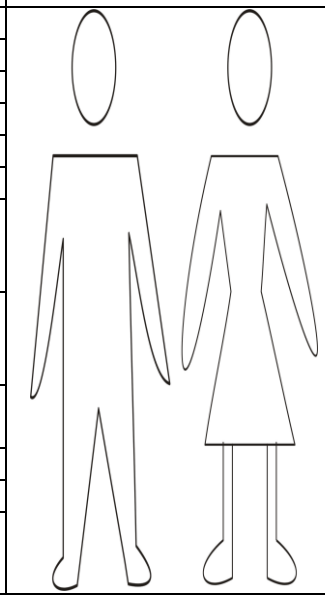


Fig. IV : Ten leading sites of cancer (1999 – 2003)

		Males					Females	
ICD-0		No.	%		ICD-0		No.	%
Bronchus & Lung	C34	691	27.5	1	Cervix Uteri	C53	558	27.9
Larynx	C32	215	8.5	2	Breast	C50	330	16.5
Esophagus	C15	174	6.93	3	Esophagus	C15	167	8.35
Lymph Nodes	C77	152	6.05	4	Ovary	C56	96	4.80
Bladder	C67	138	5.5	5	Gall Bladdder	C23	81	4.05
Hematopoietic & Reticuloendothelial systems	C42	115	4.58	6	Bronchus & Lung	C34	78	3.90
Stomach	C16	71	2.82	7	Hematopoietic & Reticuloendothelial systems	C42	64	3.20
Pyriform Sinus/ Skin	C12 C44	67 67	2.67 2.67	8	Lymph Nodes	C77	59	2.95
Brain	C71	64	2.55	9	Skin	C44	42	2.10
Prostate Gland	C61	59	2.35	10	Larynx	C32	41	2.05
	Total	2509	100			Total	1998	100



Discussion: The study has shown a steady increase in number of cases in almost all the districts. The increasing trend may be due to greater awareness regarding treatment facility, absolute increase in the total population and number of cases. The findings are in accordance with the study conducted by Sandell J et al[10]

The male to female ratio of all cases in Jammu Province is 1.25:1 which is slightly higher than the sex ratio of Jammu province[6]. Similar observations have been made by some authors[9,11,12,13]

Out of 4507 patients, 4308 (95.58%) were diagnosed microscopically including cytology and bone marrow.

Table I System wise distribution of cancer according to district – males

ICD-0	Group	Jammu		Doda		Kathua		Udhampur		Rajouri		Poonch		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
C00-C14	Lip.oral cavity & pharynx	173	12.07	21	8.23	43	16.04	28	9.86	12	7.36	14	13.20	291	11.60
C15-C26	Digestive organs	210	14.65	53	20.78	30	11.19	50	17.60	32	19.63	32	30.19	407	16.22
C30-C39	Respirator system and intrathoracic organs	537	37.47	95	37.25	108	40.30	105	36.97	55	33.74	16	15.09	916	36.51
C40-C41	Bones, joints nad articular cartilage	25	1.74	4	1.57	12	4.48	6	2.11	9	5.52	3	2.83	59	2.35
C42	Hematopole tic and reticuloend othelial systems	74	5.16	7	2.75	11	4.10	9	3.17	9	5.52	5	4.72	115	4.58
C44	Skin	41	2.86	9	3.53	4	1.49	5	1.76	6	3.68	2	1.89	67	2.67
C47	Peripheral nerves and autonomic nervous system	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C48	Retroperitoneum and peritoneum	1	0.06	1	0.39	0	0	0	0	1	0.61	0	0	3	0.11
C49	Connective subcutaneous and other soft tissues	10	0.69	3	1.18	1	0.37	4	1.41	1	0.61	0	0	19	0.75
C50	Breast	8	0.55	1	0.39	2	0.74	2	0.70	3	1.84	2	1.89	18	0.71
C51-C58	Female genital organs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C60-C63	Male genital organs	83	5.79	15	5.88	14	5.22	22	7.75	10	6.13	5	4.72	149	5.93
C64-C68	Urinary tract	107	7.46	18	7.05	19	7.09	19	6.69	8	4.91	6	5.66	177	7.05
C69-C72	Eye, brain and other parts of central nervous system	46	3.21	4	1.57	8	2.98	7	2.46	9	5.52	7	6.60	81	3.22
C73-C75	Thyroid and other endocrine glands	17	1.19	4	1.57	1	0.37	2	0.70	1	0.61	4	6.77	29	1.15
C76	Other and ill-defined sites	13	0.91	3	1.18	3	1.12	5	1.76	2	1.23	0	0	26	1.03
C77	Lymph nodes	88	6.14	17	6.66	12	4.48	20	7.04	5	3.07	10	9.44	152	6.05
	Total	1433	100	255	100	268	100	284	100	163	100	106	100	2509	100

Microscopy as a common method of diagnosis has also been reported by other authors[11,14]. In a study conducted by Bhurgi Y et al[15], the age adjusted rates were slightly higher in females (133 per lac) than males (132.4 per lac) which is almost in accordance with our study. A report of WHO [5] has depicted the annual crude incidence rate for India to be between 57-79 per lac for males and 56-91 per lac in females in urban areas.

The age Specific incidence rates were found to increase sharply with age, the curve for men and women however were quite distinct. At the younger ages, incidence rates were higher in females between

the age 30-54 years. The Indian Cancer Society in its report on cancer morbidity and mortality in greater Mumbai has given similar observations, however the lower age and upper age had a range of 26-60 years[14.] There are some studies in favour of our findings of common sites among males and females[14, 15, 16]. Some studies depict altogether different picture[10,11,17,18,19].

Studies conducted in different regions of state of Rajasthan and Mumbai, India have shown difference in leading sites of malignancies among males and females in different regions[13, 20,21].

Table II System wise distribution of cancer according to district – females

ICD-0	Group	Jammu		Doda		Kathua		Udhampur		Rajouri		Poonch		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
C00-C14	Lip.oral cavity & pharynx	50	4.51	8	4.04	7	3.29	6	2.31	8	5.63	5	6.49	84	4.20
C15-C26	Digestive organs	194	17.51	30	15.15	28	13.15	37	14.2	37	26.06	24	31.17	350	17.52
C30-C39	Respirator system and intrathoracic organs	73	6.59	10	5.05	12	5.63	18	16.92	8	5.63	7	9.09	128	6.41
C40-C41	Bones, joints nad articular cartilage	14	1.26	5	2.53	2	0.94	5	1.92	7	4.93	3	3.90	36	1.80
C42	Hematopole tic and reticuloend othelial systems	38	3.43	7	3.53	7	3.29	5	1.92	6	4.23	1	1.30	64	3.20
C44	Skin	18	1.62	7	3.53	6	2.82	5	1.92	4	2.82	2	2.60	42	2.10
C47	Peripheral nerves and ans	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C48	Retroperitoneum and peritoneum	3	0.27	0	0	2	0.94	0	0	0	0	0	0	5	0.25
C49	Connective subcut. and other soft tissues	7	0.63	0	0	2	0.94	0	0	0	0	0	0	9	0.45
C50	Breast	204	18.41	20	10.10	36	16.90	35	13.46	23	16.20	12	15.58	330	16.52
C51-C58	Female genital organs	370	33.39	90	45.45	88	41.31	129	49.61	36	25.35	17	22.08	730	36.54
C60-C63	Male genital organs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C64-C68	Urinary tract	29	2.62	4	2.02	1	0.47	2	0.77	1	0.70	1	1.30	38	1.90
C69-C72	Eye, brain and other parts of central nervous system	32	2.89	4	2.02	6	2.82	6	2.31	2	1.41	3	3.90	53	2.65
C73-C75	Thyroid and other endocrine glands	27	2.44	5	2.53	7	3.29	3	1.15	4	2.82	1	1.30	47	2.35
C76	Other and ill-defined sites	13	1.17	2	1.01	3	1.41	3	1.15	1	0.70	1	1.30	23	1.15
C77	Lymph nodes	36	3.25	6	3.03	6	2.82	6	2.31	5	3.52	0	0	59	2.95
	Total	1108	100	198	100	213	100	260	100	142	100	77	100	1998	100

Our study also shows variation in the pattern of malignancies in different districts. The findings are in accordance with other studies from India [18,22.] Studies have shown that difference in habits, customs, cultures, ethnic characteristics, dietary habits, topography and environmental factors affect the

pattern of malignancies [23,24]. The same factors could be attributed to the interdistrict variations seen in our study. This explanation is further strengthened by the fact that dietary habits of people of Poonch district and Kashmir province are similar and in both these places cancers of GIT tract are among the leading sites

Conclusion: The results of the study can be used not only to plan various interventions of cancer control activities but also to conduct further research and identify various factors which could be implicated in the causation of cancer in different regions of Jammu Province.

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