Research Article

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Pattern and magnitude of various cancers registered at regional cancer centre of a tertiary care institute in north India

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ABSTRACT

Background: Epidemiological information on cancer including the pattern is an important basis for determining the priorities for cancer control in any population group. There are marked differences in distribution of cancers in different regions of the world. Present study was conducted to study the pattern and magnitude of cancer patients that are being treated at a regional cancer centre (RCC).

Methods: Retrospective data of all cancer patients registered between the year 2008 to year 2011 was retrieved from RCC data base and individual patient files. Diagnoses of various cancers were based on histopathology, cytology, bone marrow aspirates, peripheral blood counts or a relevant tumor marker, as appropriate. Results were presented in the form of percentages and proportions. All incidence rates were expressed as Average annual ones per 100,000 populations.

Results: A total of 11213 patients of various malignancies were registered at regional cancer centre with an annual average of 2803 cases. Overall carcinoma oesophagus (14.70%) was the most common cancer followed by lung cancer (12.2%). Stomach was the third most common cancer (8.6%). Among men Lung cancer (17%) was the commonest while in women it was cancer oesophagus (15.31%).

Conclusions: Oesophageal cancer is the most predominant form of cancer found in Kashmir. The colorectal cancers are quite common in Kashmir valley that too in younger age group (15-34year) both among males and females. Lower rate of cervical cancer among women which is just 1.45% of all cancers found among females.

Keywords: Oesophageal cancer, Kashmir, Cancer incidence, RCC

INTRODUCTION

Cancer appears to have a unique place in the spectrum of human diseases. Cancer is so dreadful that it often brings about tremendous psycho-trauma, social distress and misery not only to the victim but to his family as well. It is important to remember that cancer need not always be fatal. One case in three is curable by modern methods, even one out of two may be curable if diagnosed and treated early. ^{2,3}

Various cancers, despite their diversity in clinicopathological manifestations, have some risk factors in common, a phenomenon that again binds them together and can be fruitfully utilized for the purpose of prevention as one third of cancers are preventable. The distribution of cancer between different populations and over time helps to define causal hypotheses, and to quantify the potential for prevention. Data on cancer occurrence and outcome are essential for formulating health policy, by quantifying health problems, helping to define priorities for preventive and curative programs and for evaluation of their outcomes in relation to resource inputs.⁴ Knowledge of regional variations of cancer burden will help to specify priorities and guidelines for budget and health policy.

In India, the most prevalent forms of cancer among men are tobacco-related cancers including lung, oral, larynx, oesophagus, and pharynx. Amongst Indian women, in addition to tobacco-related cancers, cervix, breast, and ovarian cancers are also prevalent. India currently has the highest prevalence of oral cancer cases in the world as a result of the popularity of chewing tobacco in its rural region.⁵

Kashmir there are enormous contrasts contradictions in terms of demography, personal, social and dietary habits. Kashmir valley located in the northern division of India, surrounded by Himalayas has a unique ethnic population living in temperate environmental conditions having distinctive food habits which play an overwhelming role in the development of GIT cancers over the genetic factors. 6-8 The valley of Kashmir presents a strikingly different picture of cancer distribution. While Oro-pharyngeal cancer is the most common type in India, oesophageal cancer is the most predominant form in Kashmir. Again while cervical cancer has a higher incidence than breast cancer in India as a whole, the situation is reverse in Kashmir. The socio-cultural and climatic reasons have led to certain wrong food habits like consumption of large quantity of red meat, sun-dried vegetables, smoked fish, locally prepared vegetable pickles, local salt tea consumed hot (noon chai) in large quantities, sedentary habits and tobacco use (hukka) for greater part of the year. The etiology and incidence of various GIT cancers in this population has been attributed to a probable exposure to nitroso compounds, amines and nitrates reported to be present in these local food stuffs. 10 The present study was intended to examine the socio-demographic profile, pattern and overall magnitude of cancers in Kashmir valley based on hospital based cancer registry at a leading tertiary care centre of the valley.

METHODS

The study was carried out at Regional Cancer Centre of a leading tertiary care institute of the Kashmir valley, which is the only such centre in the state having a hospital based Cancer registry system. Records of all cancer patients registered from 1st January 2008 to 31st December 2011 were retrieved from RCC database and individual patient files.

- Diagnoses of various Cancers were based on histopathology, cytology, bone marrow aspirates, peripheral blood counts or a relevant tumor marker, as appropriate.
- Cancers were classified according to the International Statistical Classification of Diseases

- (10th revision) coding (WHO, 1992) and categorized according to the organs affected.
- All incidence rates were expressed as Average annual ones per 100,000 population. The annual populations during the study period of 2008–2011 were cumulated for calculation of measures of incidence. Using census 2001 population of Jammu & Kashmir and annual exponential growth rate, population of Jammu and Kashmir for the years-2008, 2009 and 2010 were projected using the following formula

$$P_{x} = P_{0} (1+r)^{x}$$

Where P_x is population at time "x" and P_0 is present population and "r" is average annual exponential growth rate which is assumed to remain constant. For Jammu and Kashmir average annual exponential growth rate (x) was taken 2.15 percent.

Population of Jammu and Kashmir for the year 2011 was taken from census 2011.

RESULTS

From the year 2008 to year 2011, a total of 11213 patients of various malignancies were registered with an annual average of 2803 cases. Out of these maximum 6682 (59.6%) were males and 4531 (40.4%) were females, indicating an average of 147 male per 100 females (sex ratio). Mean age of presentation of cancer patients age was 52.71 ± 17.12 with median of 55 years. The mean age of diagnosis for females (49.59 \pm 16.90) was significantly lower than that of males (54.78 \pm 16.95) (Table 1 and Figure 1).

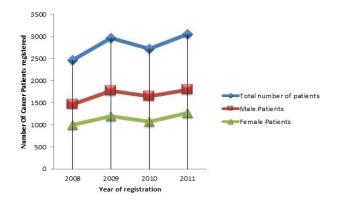


Figure 1: Line diagram showing year and sex wise magnitude of cancer patients.

Overall (both sexes combined), carcinoma oesophagus (14.70%) was the most common cancer. Median age of its occurrence was 60 years with a crude incidence rate of 3.38 cases per lakh population. Lung cancer was found to be the second most common (12.2%) with median age of onset of 60 years and average annual crude incidence rate of 2.81cases per lakh population. Stomach was the third

most common cancer (8.6%) cases with median age of onset of 60 years and average annual crude incidence of 2 cases per lakh population. Average annual crude

incidence of all cancers was found to be 23 cases per lakh population (Table 2).

Table 1: Year and sex wise distribution of cancer patients.

Year of	Male		Female		Sex ^{\$}	Total case	S
registration	Number	r and %age	Number	r and %age	ratio (%)	Number a	nd %age
2008	1468	60%	997	40%	147	2465	22.0%
2009	1772	60%	1196	40%	148	2968	26.5%
2010	1650	60%	1073	40%	153	2723	24.3%
2011	1792	58.6%	1265	41.3%	141	3057	27.3%
TOTAL	6682	59.6%	4531	40.4%	147	11213	100.0%

^{\$-} Number of male patients per 100 female patients.

Table 2: Anatomical site wise cancers in descending order of their occurrence (both sexes combined) along with average annual crude incidence (CR).

Anatomical site IC	D-10 Code	Number	%age of total	Mean±SD	Median	CR*
Oesophagus	C15	1648	14.70%	61.06±11.36	60	3.38
Lung	C34	1367	12.20%	59.17±11.74	60	2.81
Stomach	C16	974	8.60%	58.61±12.08	60	2
Colorectum	C18-C20	796	7.1%	51.32±15.79	52	1.6
Breast	C50	681	6.1%	48.09±12.96	45	1.4
Non-Hodgkin's lymphoma	C83 + C85	505	4.50%	44.84±18.92	47	1
GE junction	C16	407	3.60%	60.84±10.72	60	0.83
Skin	C43 + C44	361	3.20%	60.23±14.71	60	0.74
Ovary	C56	354	3.15%	43.75±15.57	45	0.72
Myeloid leukemias	C92 + C95	303	2.70%	37.86±17.94	35	0.62
Lymphoid leukemias	C91	265	2.36%	27.72±22.53	18	0.54
Multiple myeloma	C90	258	2.30%	56.53±12.19	56.5	0.53
Gall bladder	C23	249	2.22%	55.04±11.45	55	0.51
CNS	C71 + C72	237	2.11%	41.49±17.87	45	0.48
Soft tissue	C49	187	1.66%	38.84 ± 20.38	38	0.38
Hodgkin's lymphoma	C81 + C82	141	1.25%	30.21±18.08	27	0.29
Prostate	C61	132	1.17%	66.17±8.78	65	0.27
Pancreas	C25	118	1.05%	55.42±10.55	55	0.24
Pharynx and tonsil	C09-C13	114	1.01%	54.94±14.87	60	0.23
Kidney	C64	112	1.00%	46.77±22.62	55	0.23
Larynx and trachea	C32 + C33	106	0.94%	59.89±11.54	60	0.21
Thyroid	C73	104	0.92%	47.77±15.84	47	0.21
Others		1794	15.99%			
All cancers		11213	100%	52.71±17.12	55	23

 $[\]ensuremath{^{*}}$ Average annual crude incidence rate per lakh population

Of the total of 6682 cancer cases seen among men, 1132 (17%) were of lung cancer with median age of onset of 60 years and average annual crude incidence rate of 4.4 cases per lakh population, making it the most common cancer seen among males. Cancer oesophagus was the second most common with a total of 954 (14%) cases and average annual crude incidence rate of 3.7 cases per lakh population. Median age of its occurrence was around 63 years. Stomach cancer was the third common cancer

among males with a total of 742 (11.1%) cases with median age of onset of 60 years and average annual crude incidence rate of 2.8 cases per lakh population. Among the less common cancers seen were; cancer of bone and cartilage, oral cavity, thyroid, anal canal, adrenals, pituitary adenomas, salivary glands and meningioma (Table 3).

Of the total of 4531 cancer cases seen among women, 694 (15.31%) were of cancer oesophagus with median age of onset of 60 years and average annual crude incidence rate of 3.03 cases per lakh population, making it the most common cancer seen among females. Breast cancer was the second most common with a total of 652 (14.38%) cases and average annual crude incidence rate of 2.8 cases per lakh population. Median age of its

occurrence was 45 years. Ovarian cancers were the third most common cancer among females with a total of 354 (7.81%) cases with median age of onset of 45 years and average annual crude incidence rate of 1.54 cases per lakh population. Cancer of gall bladder was among the top ten cancers of females with a total number of 174 (3.84%) case, median age of its occurrence was 55 years (Table 4).

Table 3: Anatomical site wise cancers seen in males, in descending order of their occurrence along with average annual crude incidence rate (CR).

* Average annual crude incidence rate per lakh population.

Anatomical site	ICD-10 Code	Number	%age of total	Mean±SD	Median	CR*
Lung	C34	1132	17.00%	59.62±11.49	60	4.4
Oesophagus	C15	954	14.27%	61.93±11.30	63.5	3.7
Stomach	C16	742	11.10%	59.80±11.23	60	2.8
Colorectum	C18-C20	450	6.73%	52.77±15.65	55	1.7
GE junction	C16	344	5.14%	61.09±10.11	60	1.33
Non-Hodgkin's lymphoma	C83 + C85	341	5.10%	45.09±19.13	49	1.32
Skin	C43 + C44	217	3.24%	61.35±14.34	62	0.84
Myeloid leukemias	C92 + C95	176	2.63%	38.46±18.75	36.5	0.68
Lymphoid leukemias	C91	174	2.60%	30.21±22.98	19	0.67
Multiple myeloma	C90	164	2.45%	57.32±11.51	58.5	0.63
CNS	C71 + C72	152	2.27%	41.65±18.05	43.5	0.59
Prostate	C61	132	1.97%	66.17±8.78	65	0.51
Soft tissue	C49	111	1.66%	41.32±20.11	40	0.43
Larynx and trachea	C32 + C33	95	1.42%	60.20±11.16	60	0.37
Testes	C62	95	1.42%	34.12±13.50	32	0.37
Hodgkin's lymphoma	C81 + C82	94	1.40%	31.53±18.66	27.5	0.36
Pharynx and tonsil	C09-C13	83	1.24%	55.88±14.61	60	0.32
Kidney	C64	77	1.15%	48.21±21.77	55	0.3
Gall bladder	C23	75	1.12%	57.45±10.98	59	0.29
Pancreas	C25	73	1.09%	55.40±10.90	56	0.28
Bone & cartilage	C40 + C41	52	0.77%	29.48±18.13	20	0.2
Oral cavity	C02-C06	37	0.55%	58.86±11.60	60	0.14
Others		912	13.64%			
All cancers		6682	100%	54.78±16.95	60	26

^{*}Average annual crude incidence rate per lakh population.

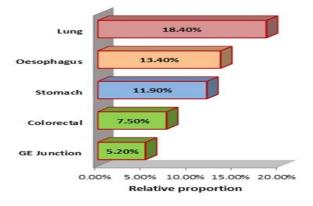


Figure 2: Leading sites in broad age groups (35-64 years) – males.

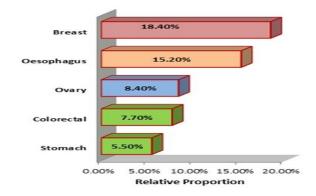


Figure 3: Leading sites in broad age groups (35-64 years) – females.

It was observed that maximum burden of cancers was seen in the age group 35-64 years (56.1%) followed by the age group > 65 years (30.4%) whereas less proportion of cancers were seen in age groups 0-14 years (3.3%) and 15-34 years (10.2%). Regarding sex wise, it was

further observed that in each age group male patients out number female patients except in age group 15-34 years in which female (51%) patients were more than the male (49%) patients (Table 5).

Table 4: Anatomical site wise cancers seen in females, in descending order of their occurrence along with average annual crude incidence rate (CR).

Anatomical site	ICD-10 code	Number	%age of total	Mean± SD	Median	CR*
Oesophagus	C15	694	15.31%	59.86±11.33	60	3.03
Breast	C50	652	14.38%	47.63±12.73	45	2.84
Ovary	C56	354	7.81%	43.75±15.57	45	1.54
Colorectum	C18-C20	346	7.63%	49.44±15.79	50	1.51
Lung	C34	235	5.18%	57.00±12.68	60	1.02
Stomach	C16	232	5.12%	54.81±13.81	56.5	1.01
Gall bladder	C23	174	3.84%	54.00±11.53	55	0.75
Non-Hodgkin's lymphoma	C83 + C85	164	3.61%	44.32±18.52	45	0.71
Skin	C43 + C44	144	3.17%	58.53±15.14	60	0.62
Myeloid leukemias	C92 + C95	127	2.80%	37.02±16.81	35	0.55
Multiple myeloma	C90	94	2.07%	55.14±13.25	55	0.41
Lymphoid leukemias	C91	91	2.00%	22.97±20.95	16	0.39
CNS	C71 + C72	85	1.87%	41.20 ± 17.63	45	0.37
Soft tissue	C49	76	1.67%	35.21 ± 20.35	34	0.33
Thyroid	C73	73	1.61%	45.86 ± 16.07	45	0.31
Cervix	C53	66	1.45%	54.48 ± 11.83	55	0.28
GE junction	C16	63	1.39%	59.49 ± 13.61	61	0.27
Hodgkin's lymphoma	C81 + C82	47	1.03%	27.55 ± 16.74	25	0.2
Pancreas	C25	45	0.99%	55.47 ± 10.08	55	0.19
Bone & cartilage	C40 + C41	40	0.88%	25.70 ± 15.14	20	0.17
Uterus	C54	38	0.83%	50.61 ± 13.28	50	0.16
Kidney	C64	35	0.77%	43.60 ± 24.40	48	0.15
Others		656	14.47%			
All cancers		4531	100%	49.59±16.90	50	19.79

^{*} Average annual crude incidence rate per lakh population.

Table 5: Number and proportion (%) of cancers by broad age groups (2008-2011).

	0-14 years	15-34 years	35-64 years	65+ years	All ages
Both Sexes	369 (3.3%)	1142 (10.2%)	6293 (56.1%)	3409 (30.4%)	11213 (100%)
Males	220 (60%)	562 (49%)	3515 (56%)	2385 (70%)	6682 (60%)
Females	149 (40%)	580 (51%)	2778 (44%)	1024 (30%)	4531 (40%)

Regarding age group of 35-64 years, it was observed that the commonest site of cancer in males was lung (18.40%) whereas in females it was breast (18.40%). It was followed by cancer oesophagus (males-13.40%; females-15.20%) in both the sexes (Figure 2 and 3).

Cancer oesophagus was the leading site in both sexes in age group 65 and above years (males-20%; females-27.10%). Lung cancer (19.40%) was second common among males, it was breast cancer (8.30%) in case of females. Stomach (12.8%) was the third most common

site seen in males whereas lung cancer (8.20%) was at number third among females (Figure 4 and 5).

In the age group of 15-34 years, it was observed that Non-Hodgkin's lymphoma (10.7%) was the leading cancer followed by colorectal and myeloid leukemia's as the second most common each having proportion of 10.5% of all cancers in case of males. Regarding females, cancer ovary was the leading site with a relative proportion of 14.1% of all cancers. This was followed by breast cancer (12.4%) and colorectal cancers (10%) (Figure 6 and 7).

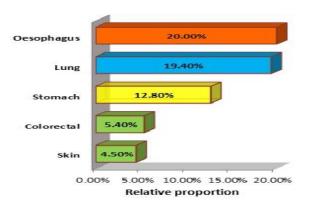


Figure 4: Leading sites in broad age groups (65 and above years) – males.

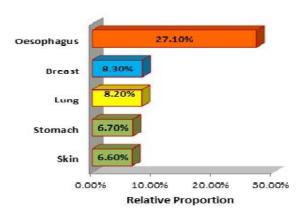


Figure 5: Leading sites in broad age groups (65 and above years) – females.

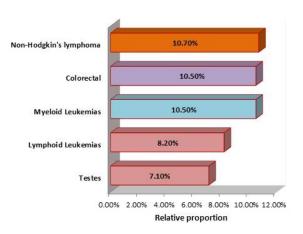


Figure 6: Leading sites in broad age groups (15-34 years) – males.

Lymphoid leukemia's were the most common cancers with a relative proportion of 26.4% in males and 29.5% among females in the broad age group of 0-14 years (Figure 8 and 9).

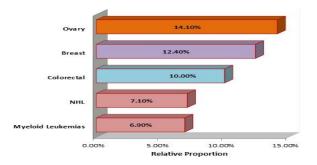


Figure 7: Leading sites in broad age groups (15-34 years) – females.

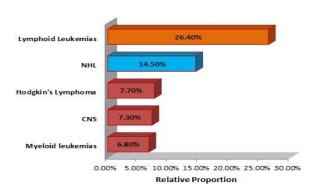


Figure 8: Leading sites in broad age groups (0-14 years) – males.

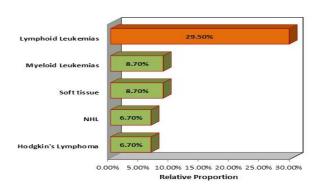


Figure 9: Leading sites in broad age groups (0-14 years) – females.

DISCUSSION

Epidemiological information on cancer including the pattern is an important basis for determining the priorities for cancer control in any population group. There are marked differences in distribution of cancers in different regions of the world. Environmental and socio-cultural factors such as active and passive tobacco smoking, use of non-smoking tobacco, alcohol intake, dietary factors, pollutants of air, water and soil etc. contribute for the development of different types of cancers.

In the present study, a total of 11213 patients were registered over a period of four years from year January 2008 to December 2011. Median age of female cancer

patient is 50 years which is 10 years lower than the male median age of presentation of 60 years. When compared with other hospital based cancer registries located in major cities of India under National Cancer Registry Programme, somewhat similar proportions of male: female patients were seen with males outnumbering female cancer patients at Tata Memorial Hospital, Mumbai (total cancer patients 34712 with 55.9% males and 44.1% females); Regional Cancer Centre, Thiruvananthapuram (total cancer patients 23957 with 52.4% males and 47.6% females) and Assam Medical College, Dibrugarh (total of 2845 patients with 62.6% males and 37.4 females). While in Kidwai Memorial Institute of Oncology, Bangalore and Cancer Institute, Chennai, females outnumbered male patients. In a similar study conducted by Rasool et al at SKIMS, it was found that out of 8648 cancer patients, 59.82% were male and 40.17% were female which is similar to what was seen in present study. 11 Another study by Sheikh Gazalla Ayub et al done in Kashmir valley, found a total of 6943 cancer patients from year 2002 to 2006 out of which 62.6% were male while 37.4% were female cancer patients.12

Overall, among both the sexes oesophageal cancer was the most common malignancy. This cancer by far exceeds the frequency of other cancers in both the sexes contributing to about 15% of the total number of cancer cases seen at this hospital based cancer registry. Squamous cell carcinoma (SCC) was the most common (found in 96% cases) histopathological finding.

The preponderance of oesophageal cancer in Kashmir can be ascribed to the lifestyle and local dietary habits among Kashmiri's, as various epidemiological studies in regions of the world with high incidences of oesophageal cancer have substantiated the important role of these two in the incidence pattern of oesophago-gastric cancer. 13,14-17 The most important specific food habit in Kashmir is the frequent consumption of hot salt tea by local inhabitants, more so during the winter months when the temperature falls to subzero levels. The salt tea is prepared traditionally in a specially designed copper vessel called a 'samawar'. The components of salt tea like sodium bicarbonate and common salt, a well-known irritant of gastric epithelium are believed to be the chief suspects causing oesophageal cancer. 18 In addition, salt tea showed the formation of high amounts of N-nitrosopipe-colic acid with several unidentified non-volatile N-nitroso compounds on nitrosation of tea extracts under conditions simulating the fasting human stomach.¹⁹

Another specific dietary habit that is very particular to Kashmiri population is the practice of drying raw food stuffs in open sun and this dried food is stored and later on consumed in the winter months. ¹⁷ Studies have shown that these foods contain significant amounts of N-nitroso compounds. ²⁰ In addition, other Kashmiri food items contributing to substantial amount of N-nitroso compounds include salt tea, dried fish, vegetables

especially Brassica olerecea (haak), red chillies, and a packed bread-like oily mixture of spices known as "waer" in Kashmir. ^{21,22}

Lung cancer was the most common malignancy among the males in our study with median age of onset of 60 years. Lung cancer was also found as the predominant cancer in males in a study by Rasool et al while oesophageal cancer was found to be the commonest cancer both in male as well as females in a study by Sheikh Gazalla Ayub et al. 11,12 A study by Pandith A et al 2012 found stomach cancer as the leading one among males.²³ In India, lung cancer was thought to be infrequent, but as per the data given in first All India Report (AIR) 2001-2002, in males the lung cancer is leading site of cancer in 8 of the 12 population based cancer registries (PBCR's). ^{24,25} Lung cancer was reported to be the second most common malignancy in an earlier hospital based study from Kashmir valley. 26 However, a recent study by Koul et al reported that Srinagar, the summer capital of Jammu & Kashmir has the highest incidence of lung cancer among males in India.²

Cancer Breast was found to be the second common malignancy among females with median age of 45 year and average annual crude incidence rate of 2.84 cases per lakh population. Breast Cancer oesophagus was again second commonest malignancy among females in a study by NA Khan et al 2011. 28 Breast cancer was also reported second common cancer in females in a study by Sheikh Gazalla Ayub et al who found it in about 22.8% of female cancer patients and Pandith A et al who found it in 16.6% of female cancer patients. 12,34 Breast cancer is the leading site of cancer among females at Tata Memorial Hospital, Mumbai (27.5%) and Regional Cancer Centre, Thiruvananthapuram (27.1%).²⁹ It is second most common cancer among females at Kidwai Memorial Institute of Oncology, Bangalore (15.4%); Cancer Institute, Chennai (21.6%) and Assam Medical College, Dibrugarh (14.3%).²⁹ Although smoking is not so prevalent among female population in this region but they are exposed to passive smoking as they work neck to neck in fields with their male partners and while indoors most of the family members sit together. Females are also exposed to kitchen smoke and fumes as they use cowdung, wood, coal etc. as fuels for cooking.³

In cancer types common to both the sexes, the proportion in the men exceeds that in women in almost all types of cancer. Tobacco-associated head and neck cancers (tongue, mouth, oropharynx, hypopharynx and larynx) constituted about 2.57 % of the total (male and female cancers). They constitute 3.21% of male cancers and only 1.64% of female cancers in our study. Tobacco chewing and smoking have been identified as the major risk factors for these cancers in India. Tosac-control studies from Mumbai and Thiruvananthapuram have shown that smoking was significant risk factors for the cancer of larynx. There is a very low prevalence of tobacco chewing habit in Kashmir compared to other regions in

India. This can be one of the reasons that the incidence of head and neck cancer is lower in Kashmir as compared to other Indian cancer registries.

The higher frequency of skin cancer in men (3.24%) as well as women (3.17%) is perhaps caused by the greater exposure to the sun that they receive especially while farming. Additionally, studies have shown that the use of firepot (*kangri*) an indigenous mode of providing warmth (peculiar to Kashmir) during extreme cold conditions in the valley also contribute towards skin cancer in the valley.³⁶ The latter is known to arise from *Erythema ab Igne or Kangri burns*.

Present study shows a different pattern of cervical cancer in Kashmiri women population, the frequency of this cancer being very low which is quite contrary to the pattern seen in rest of the country, where cervical cancer is the leading cancer in females in some hospital based cancer registries like Bangalore (27.5% of all female cancers) and Chennai (28% of all female cancers). This change in pattern and the lower rate of cervical cancer which is just 1.45% can be attributed to the practice of universal circumcision, prevalent in the majority Muslim community of Kashmir valley.

In the age group of 15-34 year among males, NHL is the leading cancer constituting 10.7% of all new cancer cases in the valley. This is followed by colorectal cancer almost constituting similar proportion (10.5%) of all new cancer patients. This pattern is quite different to what is seen in other hospital based cancer registries wherein, myeloid leukemia (Mumbai 12.9%; Bangalore 12.5%; Chennai 12.4%) Thiruvananthapuram and hypopharynx (Dibrugarh 7.8%) are the leading cancer in males in the same age group. Colorectal cancers which is quite common in this age group in males in valley is not figuring in the first five most common malignancies in any of the above mentioned hospital based cancer registries.²⁹ Colorectal cancers among females in the same age group (15-34 years) is the third common malignancy constituting 10% of all new female cancer patients. This indicates that colorectal cancers are quite common in Kashmir valley that too in younger age group (15-34 year) both among males as well as females. Epidemiological studies on various populations have shown that an increased risk of developing GIT cancers is associated with diet.³⁷⁻³⁹ One important hypothesis that has received a large amount of attention is that N-nitroso compounds from dietary sources are involved in the carcinogenesis of GIT cancer. 40,41 It has been proven beyond doubt that Kashmiri population is exposed to a special set of environmental and dietary risks, including exposure to nitroso compounds, amines and nitrates, reported to be present in local foodstuffs, most of which have been shown to contain important irritants and carcinogens. 7,10 It appears that a well-designed casecontrol study will be required to address the issue of role of diet and personal habits with colorectal cancers among Kashmiri's.

CONCLUSION

Oesophageal cancer is the most predominant form of cancer found in Kashmir. The colorectal cancers are quite common in Kashmir valley that too in younger age group (15-34 years) both among males and females. Lower rate of cervical cancer among women which is just 1.45% of all cancers found among females.

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