

## Profile of Gastro-intestinal cancers registered at a tertiary care Institute-A Cross-sectional study

Dr QAZI MOHAMMAD IQBAL

*Assistant Professor Community Medicine, GMC Rajouri*

Dr ABDUL HAKIM

*Assistant Professor Radiotherapy, GMC Rajouri*

Dr KANISHTHA SHARMA

*Assistant Professor Microbiology, GMC Rajouri*

Dr AMAN SHARMA

*Assistant Professor Pharmacology, GMC Rajouri*

Dr SUMAIRA QAYOOM

*Assistant Professor Microbiology, SSIMS & RC Banguluru, Karnataka*

### Abstract

**Introduction:** Cancers, despite their diversity in clinico-pathological 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. **Objective:** The purpose of the present paper is to study epidemiological profile of gastrointestinal cancer. **Material and methods:** A Cross-sectional study in which all GI cancer patients who were registered from 1st January 2011 to 31st December 2011 were studied prospectively. **Results:** Carcinoma esophagus (39.5%) was the number one GI malignancy which was followed by carcinoma stomach (24.4%) and carcinoma GE junction (14.34%).

**Keywords:** Carcinoma, RCC, cancer incidence.

### INTRODUCTION:

The cancers, as they are defined, are “Group of heterogeneous disorders characterized by clonality (arise from a single stem cell that clones into carcinomatous cells), Autonomy (the cell division and growth is uncontrolled), Anaplasia (lack of cell differentiation) and Metastasis (distant spread) (1). Cancers, despite their diversity in clinico-pathological 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 (2). 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 (3, 4).

Cancer incidence is continuously increasing in India. Earlier studies have reported that oral, cervical, and breast cancers constitute the common malignancies in India, comprising about 34% of all the reported cases (5). Cancer is the second most common fatal disease in India accounting for about 7% of annual deaths (6). The number of prevalent cancer cases in India over 5 years is estimated to be around 2.3 million with about 1.2 million new cases and 785 thousand deaths (7). The total cancer burden in India is projected to increase substantially from about 1.2 million new cases in 2018 to more than 1.9 million by 2040 (7).

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 (8). 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 (9).

Pattern and distribution of various cancers in a region can provide valuable insights to the policy makers to improve the planning for the prevention and early diagnosis of cancer. The present cross-sectional study was intended to examine the socio-demographic profile, pattern of Gastro-intestinal cancers based on hospital based cancer registry at a leading tertiary care centre of the valley.

## MATERIALS AND METHODS:

The study was carried out at Regional Cancer Centre of Sher-i-Kashmir Institute of Medical Sciences, Soura Srinagar, which is the only such centre in the State having a hospital based Cancer registry system. All GI cancer patients who were registered from 1st January 2011 to 31st December 2011 were studied prospectively. The data was collected from RCC SKIMS for a period of one year (01 Jan 2011 to 31 Dec 2011).

- All newly diagnosed gastrointestinal tract cancer patients who are referred to Regional Cancer Centre SKIMS were taken up as study subjects. All such patients were interviewed once.
- Diagnosis of various GI cancers was based on histopathological examination of the appropriate specimen. Cancers were categorized according to the organs/region affected of the gastrointestinal tract.

A self-designed, pre-tested semi-structured questionnaire was used to assess various socio-demographic variables and risk factors on the occurrence of various GI cancers. The magnitude and pattern of various GI cancers was analysed using SPSS version 20 software. Data was represented in the form of tables, bars and proportions. Appropriate statistical methods were applied as per the requirement.

## RESULTS:

A total of 537 patients of gastrointestinal (GI) cancers were registered from 1<sup>st</sup> January 2011 to 31 December 2011. Out of which 346 (64.4%) were males and 191 (35.6%) were females (Table 1 and Fig 1)

Table 1: Socio-demographic profile of GI cancer patients

Factor	Class	Number (%age)
Age	0-14	0
	15-34	23(4.3%)
	35-64	287(53.4%)
	65 & Above	227(42.3%)
Sex	Male	346(64.4%)
	Female	191(35.6%)
BMI	< 20 Kg/m <sup>2</sup>	230(42.8%)
	20-25 Kg/m <sup>2</sup>	257(47.8%)

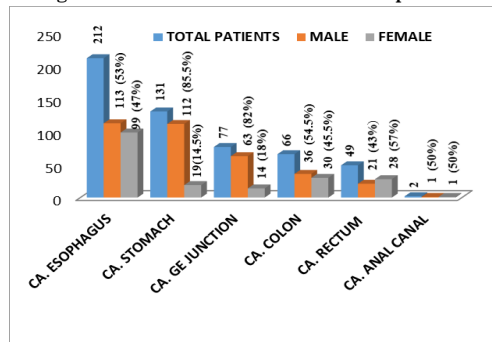
	>25 Kg/m <sup>2</sup>	50(9.3%)
Occupation	Professional	1(0.18%)
	Semiprofessional	17(3.16%)
	Clerical/shop/farmer	239(44.5%)
	Skilled	42(7.8%)
	Semi-skilled	16(3%)
	Unskilled	21(4%)
	Housewife	174(32.4%)
	Unemployed	27(5%)
Working in orchards	Yes	229(42.6%)
	No	308(57.3%)
If yes do patient use insecticides/pesticides	Yes	223(97.4%)
	No	6(2.6%)
Family history of cancers	Yes	58(10.8%)
	No	479(89.2%)
Level of education	Illiterate	398(74.1%)
	Primary school	35(6.5%)
	Middle school	41(7.6%)
	High school	40(7.4%)
	Intermediate/diploma	3(0.55%)
	Graduate	17(3.16%)
	Postgraduate	3(0.55%)
Marital status	Married	456(85%)
	Widowed	59(11%)
	Divorced	2(0.37%)
	Single never married	20(3.7%)

With regards to histopathological types of various GI cancers among the patients, all stomach and colorectal cancers were adenocarcinomas while as in case of oesophagus, majority (96%) were squamous cell carcinomas and only 4% were adenocarcinomas. Among GE junction carcinomas, majority (83%) were adenocarcinomas while only 17% were squamous cell carcinomas (Table 2)

Table 2: Histopathological types of various GI cancers

Type of GI Cancer	Type of cancer			Total
	Squamous Cell Carcinoma	Adenocarcinoma	Colloid Carcinoma	
Ca. Oesophagus	204(96%)	8(4%)	0	212(39.5%)
Ca. GE junction	13(17%)	64(83%)	0	77(14.34%)
Ca. Stomach	0	131(100%)	0	131(24.4%)
Ca. Colon	0	66(100%)	0	66(12.3%)
Ca. Rectum	0	49(100%)	0	49(9.12%)
Ca. Anal canal	0	1(50%)	1(50%)	2(0.37%)
<b>Total</b>	<b>218(40.6%)</b>	<b>318(59.2%)</b>	<b>1(0.2%)</b>	<b>537</b>

**Fig. 1: Sex distribution of GI cancers patients**



It was observed that out of total 537 patients, 341 (63.5%) had smoked tobacco in one or the other form in their life. Out of the total 341 smokers, maximum (66.5%) were hukka smokers followed by cigarette smokers (21.7%), 1.2% were smoking all the three; cigarette, biddi and hukka whereas only 0.6% were biddi smokers. Out of total 114 cigarette/biddi smokers, most (51.7%) were smoking around one pack per day and about 63% of patients were smoking cigarette/biddi for more than twenty years. Among total of 227 hukka smokers, 50% were smoking it, more than ten times a day and another 40% were smoking around five to ten times per day. Regarding consumption, majority of hukka smokers, 74% were smoking less than 100 gram tobacco per day and around same percentage (76.5%) of patients were smoking it for more than twenty years. 77.6% patients were exposed to second hand smoke (passive smoking) with around 51% of them for more thirty years.

Only 1.5% of patients were tobacco chewers while 23% of patients were using snuff. Most of the snuff users (54%) were using it five to ten times per day with around same percentage (55%) of patients using it for more than twenty years.

All patients (100%) used to take fresh vegetables. Around 63% of patients used to take vegetables on all days of week with only 1% of patients taking it once a week. With regard to fresh fruit intake maximum of 92.6% patients used to take it in their diet with 31.4% taking it once a week with another 26% taking it twice a week and only 6.5% patients take it on all days of week. 7.6% of patients did not take fresh fruits at all.

Maximum number of patients (99 %) was taking red meat in their diet with 34% taking it once a week, 30% taking it twice a week and only 3.5 % of patients taking it on all days of week.

Regarding smoked foods, 16% of patients were taking it with majority (73.5%) of patients consuming it occasionally while only 16% taking it once a week. With respect to home-made pickled and preserved foods, it was seen that maximum (90%) of patients were consuming it with 45% patients taking it occasionally and only 4% taking it on all days of week.

Regarding fast food consumption, it was found that only 6% of patients were taking it with 56.25% taking it occasionally whereas only 3.12% was taking it regularly (all days of week). It was seen that majority (90%) of patients were taking home-made pickled/preserved foods while only 16% of patients were taking smoked foods in their diet. Maximum number of patients (86%) was eating sundried vegetables with around

42% of them eating it for around two months of the year. Nearly all patients (99.6%) were taking salted tea (noon chai ) with 62% of them consuming it boiling hot. 55% of patients taking salted tea (noon chai ) take 6-10 cups per day with only 1.2% of patients taking two cups per day. Overall 14.4% of GI cancer patients taking salt tea (noon chai), took more than 10 cups per day.

Study revealed 3.7% of GI cancer patients had H pylori infection while 1.5% had HBV infection whereas only 0.55% of patients were infected with HCV.

## DISCUSSION:

Epidemiological information on cancer 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 current study, Socio-demographic profile of GI cancer patients (n=537) revealed that 64.4% (346) were males and 35.6% (191) were females, majority of patients (53.4%) were in age group of 35-64 years followed by 65 and above age group (42.3%). In a similar study by N A Khan et al 2011 (10) who studied 100 esophageal cancer cases and 100 healthy subjects, found 71% male patients and 29% female patients among the cases, majority of patients in their study were in the age group of 40-70 years. In the present study only 9.3% (50) patients have BMI more than 25kg/m<sup>2</sup>, this may be due to the fact that in all patients, height and weight were recorded after the diagnosis when the patient had already suffered from cancer cachexia and subsequent weight loss. Maximum numbers of patients 239 (44.5%) were farmers belonging to various part of valley, female patients were mostly housewives 32.4% (174). NA Khan et al 2011 in a similar study found 37% farmers and 29% patients as housewives (10). Present study revealed that about 42.6% (229) GI cancer patients were also working in orchards with majority of them 97.4% (223) using insecticides/pesticides while working there. In a study by Mariya Amin Qurieshi et al 2007 in Kashmir found that among the occupational groups, 32% had exposure to insecticide (11). It seems that the farmers may be exposed to a variety of hazardous chemicals and biological agents that are known or suspected carcinogens such as insecticides/pesticides, solvents, zoonotic viruses and fungi.

About 11% (58) of GI cancer patients had family history of cancers in their families. Of the total of 212 esophageal cancers, 28 (13.2%) had family history; 77 GE junction cancers, 6(8%) have family history of cancers; 118 stomach cancers 13 (11%) have family history and among 66 total colon cancer, 8 (12.2%) have family history of cancers. In a study by Neagoe et al 2004, among total of 333 patients of colorectal cancers, 27.6% had a family history of cancers in first and second degree relatives, of whom 7.2 % had a family history of colorectal cancers while 20.4% had family history of other cancers (12). Mariya Amin Qurieshi et al 2007 in a study found family history of cancer in 7.4% of cases (11). Most studies addressing familial aggregation have found that positive family history for esophageal and other cancers has a strong risk associated with the disease (13). In early studies done by Pour P et al 1974 and Ghadirian P 1985, of 427 Turkmen with esophageal cancer, 47% had a positive family history for esophageal cancer (14, 15). The age of onset for 40% of those with family history was younger than 50 years (an early onset indication). In several case-control

studies done in the high risk area, odd ratios of 1.8 to 7 for a positive family history has been reported among patients **(13, 16, 17)**.

With regard to smoking as a risk factor for GI cancers among the patients studied, around 63.5% (341) patients have smoked one or the other forms of tobacco. Maximum patients 66.5 % ( 227) and were smoking hukka and 21.7 % (74) were cigarette smokers. About 78% (417) of patients in the present study were exposed to passive smoking. In a study by NA Khan et al 2011 found 72% smoker with hukka being the major mode of smoking in 91.7% cases and 78.8% patients smoke more than 20 gm of tobacco per day **(10)**. Only 1.5% (8) patients in the present study were chewing tobacco while 23% (122) patients were using snuff. In a study by Mariya Amin Qurieshi et al 2007 found that among male patients, almost 90% (55/62) used tobacco in some form and among females 53% (10/19) used tobacco. Female tobacco users were mainly hukkah smokers (7/19) **(11)**. G. M. Malik et al 2000 in his study found 60% patients were smokers while 40% were non-smokers **(18)**. In Kashmir, the situation appears different from rest of India; the valley is almost devoid of alcohol consumption and tobacco or betel nut chewing. However smoking in form of water pipe or cigarette is widespread in the general male as well as female population especially from older generation. Other variants of tobacco such as snuff (“*Naass*”- lime based tobacco powder) are frequently used by the locals especially the rural male population. Snuff has also been reported to be a common form of tobacco consumption in other high-incidence areas, as for example in northern Iran.

Alcohol drinking was found in only 1% (5) of patients in the present study, this was consistent with the previous studies done in valley by Mariya Amin Qurieshi et al 2007 and NA Khan et al 2011**(11,10)**. In Kashmir, due to social stigma attached, it is difficult to measure the alcohol intake of an individual.

Maximum number of patients ( 99 %) in our study used to take red meat in their diet with 34% taking it only once a week with another 30% taking it twice a week and only 3.5 % of patients taking it on all days of week. NA Khan et al 2011 in his study in Kashmir valley found meat consumption was very low in their patient population. None of their patients consumed meat on a daily basis. 41% of our cases took meat once a week **(10)**. Low meat intake may again be explained on the basis of poor socioeconomic condition of our patients.

16% of GI cancer patients in the present study used to take smoked foods in their diet with maximum patients (73.5%) taking it occasionally and another 16% taking it once a week. In her study by Mariya Amin Qurieshi et al 2007, she found that 35% were taking smoked food **(11)**. In Kashmir valley, besides the fresh fish, sun-dried (*Hukha-gaard*) and smoked fish (*Faer*) are consumed quite commonly. The process of sun drying is simple and similar to that practiced in many other places. Around 90% of patients used to take home made pickled and preserved foods in their diet with 45% patients taking it occasionally and only 4% taking it on all days of week. Maximum number of patients (86%) used to take sundried vegetables with 42% of them eating it for around two months of the year. Mariya Amin Qurieshi et al 2007 in her study found around 67% patients used to take home-made pickles while 87.3% patients were taking sundried vegetables **(11)**.

In our study nearly all patients (99.6%) used to take noon chai (salt tea) with 62% taking it boiling hot. 55% of patients taking noon chai (salt tea) take six to ten cups per day. In the study by NA Khan et al 2011 found that nearly all patients were taking noon chai (salted tea) and homemade or backed bread in their breakfast. 76% patients

consumed less than five cups/day. More than five cups/day were consumed by 24% of patients (10). Maria Qurieshi et al 2007 in her study found more than 2/3rd of the patients had the habit of consuming more than 4cups/day of noon chai (salt tea) (11). The association between drinking hot beverages and risk of esophageal cancer suggests that thermal injury could be a cause of other cancers of the upper aero digestive epithelial; however, this hypothesis has been investigated in only a few epidemiological studies. For hot tea drinking, the evidence is too limited to draw any conclusions (19-21). Potential carcinogenic effects of hot beverages on other parts of the upper aero digestive tract warrant further investigations.

In this study it was found that 1.5% (8) patients were infected with HBV, 0.55 % (3) patients were infected with HCV while H pylori infection was seen in 3.7% (20) patients. Mariya Amin Qurieshi et al 2007 in her study tested 33 patients for H pylori. Among them 20 (61%) were negative and 13(39%) were positive (11). In a review of H pylori studies in relation to gastric cancers Miwa et al. 2002 observed that the established link between H pylori and stomach cancer in Japan is not repeated in countries like India and Bangladesh which had a high prevalence of H pylori but low gastric cancer (22). A recent meta-analysis examining studies published between 1991 and 2002 to determine the relationship between H. pylori and colorectal neoplasia found an overall statistically significant association between H. pylori and the risk of colorectal neoplasia (OR, 1.4; 95% CI, 1.1-1.8) (23).

## CONCLUSION:

GI cancers are found more commonly in Kashmir region. More comprehensive epidemiological studies need to be undertaken to unravel the reasons behind the apparent higher incidence GI cancers in Kashmir as compared to the other parts of country. When unravelled, such studies shall augment and enhance the role of preventive measures.

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