

## RESEARCH COMMUNICATION

# Burden of Hospitalization for Gastrointestinal Tract Cancer Patients - Results from a Cross-sectional Study in Tehran

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### Abstract

**Background:** Cancer is the third most common cause of death in Iran. The gastrointestinal cancers are the most frequent neoplasms among Iranian males and second to breast cancer among females. The objective of this study was to provide accurate up-to-date epidemiological information of hospitalized patients with GI tract cancer in Iran. **Methods:** This study was designed as a retrospective cross-sectional survey included all consecutive GI cancer patients admitted over a one year period in a randomly selected hospital group located in metropolitan Tehran in 2006. Residence, age, sex, type of cancer and length of hospitalization were analyzed. **Results:** A total of 2,674 GI tract cancer patients were included in the study, There were 1,616 men (60.4%) and 1,058 women (39.6%). The majority of cancers were in the colorectum (40.0%), followed by the stomach (34.5%) and the esophagus (17.1%). The mean hospitalized durations were  $7.5 \pm 6.5$  days for men and  $7.2 \pm 8.1$  days for women. Male patients were significantly older than the women. **Conclusion:** By considering the hospitalized GI tract cancers and majority cases of colorectal cancer, prevention programs like as CRC screening should be going on in order to reducing morbidity and incidence rates in a high-risk population for GI tract cancers.

**Key Words:** GI tract cancers - hospitalization - Iran

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### Introduction

Cancer is the third most common cause of death in Iran and annually 30000 of Iranian die due to cancer (Naghavi, 2004). Approximately 50,000 new cases of cancer occur each year in the Iranian population of 70.4 million (Mohebbi et al., 2008).

The gastrointestinal cancers are the most frequent cancer among Iranian males and second to breast cancer among females (Mosavi-Jarrahi and Mohagheghi, 2006). These Cancers has been reported as the most common fatal cancer in some parts of Iran. Overall, GI cancers account for nearly half (44.4%) of all cancer related deaths in Iran (Naghavi, 2004). According to the cancer registry program and the Cancer Institute cancer research centre, it was earlier estimated that the majority of GI cancers occur in the stomach. The next sites most commonly affected by GI cancers are the colon and rectum (colorectal cancers), esophagus, pancreas and liver (Cancer incidence in Tehran, 2007).

Overall, gastric cancer incidence and mortality have fallen dramatically over the past 70 years (Parkin et al., 1993). Despite its recent decline, gastric cancer is still the fourth most common cancer and the second leading cause

of cancer-related death worldwide (Parkin, 2004; Parkin et al., 2001). Colorectal cancer is one of the most common cancers in the western countries (Keighley, 2004; Ahmedin et al., 2002), the 2nd leading cause of cancer death in men and women in the United States (James et al., 2002; Stone et al., 2004) and one of the biggest killers worldwide with economically developed countries having the highest incidence (World Health Organization, 2002). Esophageal cancer, one of the least studied cancers worldwide (Enzinger and Mayer, 2003), displays unique epidemiologic features that distinguish it from all other malignancies. The incidence of esophageal cancer in Iran is variable, similar to other high-risk areas of the Asian esophageal cancer belt (Mosavi-Jarrahi and Mohagheghi, 2006).

Recognizing the need to better inform the policy makers, health professionals, and the comprehensive cancer control community in Iran about the burden of the different types of gastrointestinal cancer, the available random sample statistics of inpatients with colorectal, gastric, liver, pancreatic and esophageal cancers in Tehran hospitals were employed in order to drawn up accurate up-to-date epidemiological information of these hospitalized patients in the country.

## Patients and Methods

This study was designed as a retrospective cross-sectional survey included all consecutive gastrointestinal cancer patients admitted over one year period in a random selected hospital group located in Tehran metropolitan in 2006. There are up to 142 medical hospitals in Tehran that covered and organized by 3 medical universities, from that, 19 hospitals selected randomly. The hospitals that have not any gastrointestinal disease or internal medicine wards and also army hospitals excluded from the study and replaced with another one.

Coding of cancer diagnosis samples was based on the international classification of disease for oncology (ICD-O) coding (Fritz et al., 2000). Study population based on ICD-O coding, including C00–C26. The cases of interest were all digestive system cancer patients registered between 2005 until 2006 among these esophageal cancer (C15), gastric cancer (C16), colon and rectosigmoid cancer (C18-C21), liver (C22), and pancreas (C25) are investigated here.

The following criteria were analyzed retrospectively: residence, age, sex, type of cancer and length of hospitalization. Descriptive statistics, contingency table and t-test were performed to analyze the results.

## Results

A total of 2,674 gastrointestinal cancer patients were included in the study, There were 1,616 men (60.4%) and 1,058 women (39.6%) with a male/ female ratio of 1.53. The mean±sd of age were 58.9±27.1 for men and 54.3±14.4 for women. Table 1 showed the distribution of diagnosis, sex and type of hospital for inpatients with gastrointestinal cancers. Up to 94 percent of hospitalized cases were reported from public hospitals under the authority of medical universities and only 6 percent were from private hospitals. The vast majority of cancer cases are colorectal cancer (40.0%), followed by gastric cancer (34.5%) and esophagus cancer (17.1%). All women cases are statistically younger than men's for all diagnosis (Table 2). The mean±sd of hospitalized duration were 7.5±6.5 days for men and 7.2±8.1 days for women (Table 3). Length of staying at the hospital was significantly higher for men than women with colorectal and liver cancer.

## Discussion

Cancer is still an increasing health problem in Iran and malignancies of the GI tract has been reported as the most common fatal cancer in Iran (Naghavi, 2004). Cancers of the gastric, esophagus and colorectal are now the three leading types of cancer found in males, and cancers of the breast, esophagus and gastric in females in some areas of Iran (Sadjadi et al., 2005). However for gastric cancer no significant difference was detected for survival time according to genders (Pourhoseingholi et al., 2007).

In this cross sectional study we found a bulk of inpatients with colorectal and gastric cancers. Despite the

**Table 1. Distribution of Hospitalized Patients with Sex and Type of Hospital**

| Diagnosis/ICD-OC   | Sex   |              | Type of Hospital (%) |              |           |
|--------------------|-------|--------------|----------------------|--------------|-----------|
|                    | Total | Female       | Male                 | Public       | Private   |
| Colo-Rectal Cancer |       |              |                      |              |           |
| 18-21              | 1,072 | 491 (45.8)   | 581 (54.2)           | 968 (90.3)   | 104 (9.7) |
| Esophagus Cancer   |       |              |                      |              |           |
| 15                 | 459   | 203 (44.2)   | 256 (55.8)           | 443 (96.5)   | 16 (3.5)  |
| Gastric Cancer     |       |              |                      |              |           |
| 16                 | 923   | 273 (29.6)   | 650 (70.4)           | 886 (96.0)   | 37 (4.0)  |
| Liver Cancer       |       |              |                      |              |           |
| 22                 | 110   | 41 (37.3)    | 69 (62.7)            | 109 (99.1)   | 1 (0.9)   |
| Pancreatic Cancer  |       |              |                      |              |           |
| 25                 | 110   | 50 (45.5)    | 60 (54.6)            | 109 (99.1)   | 1 (0.9)   |
| Total              | 2,674 | 1,058 (39.6) | 1,616 (60.4)         | 2,515 (94.1) | 159 (6.0) |

**Table 2. Mean±SD of Age According to Diagnosis and Sex for Inpatients with Gastrointestinal Cancer**

| Site/ICD-OC |       | Male          | Female        | P-value |
|-------------|-------|---------------|---------------|---------|
| Colo-Rectal | 18-21 | 55.81 ± 15.90 | 52.79 ± 15.48 | 0.002   |
| Esophagus   | 15    | 61.61 ± 11.89 | 58.33 ± 11.45 | 0.003   |
| Gastric     | 16    | 61.37 ± 38.53 | 56.59 ± 12.79 | 0.046   |
| Liver       | 22    | 55.86 ± 15.77 | 48.61 ± 13.64 | 0.016   |
| Pancreatic  | 25    | 53.18 ± 12.29 | 44.32 ± 15.27 | 0.001   |
| Total       |       | 58.87 ± 27.10 | 54.27 ± 14.41 | 0.000   |

**Table 3. Mean±SD of Hospitalization Length according to Diagnosis and Sex**

| Site/ICD-OC |       | Male        | Female      | P-value |
|-------------|-------|-------------|-------------|---------|
| Colo-Rectal | 18-21 | 7.06 ± 6.93 | 6.23 ± 5.79 | 0.049   |
| Esophagus   | 15    | 8.09 ± 8.33 | 9.39 ± 13.1 | 0.210   |
| Gastric     | 16    | 7.58 ± 4.87 | 7.23 ± 5.92 | 0.430   |
| Liver       | 22    | 7.30 ± 4.04 | 5.26 ± 3.79 | 0.016   |
| Pancreatic  | 25    | 8.83 ± 9.13 | 7.90 ± 7.83 | 0.603   |
| Total       |       | 7.51 ± 6.46 | 7.19 ± 8.09 | 0.295   |

fact that the incidence of gastric cancer is higher than other GI tract cancer, colorectal cancer ranked gastric cancer in both genders according to hospitalized patients.

Although some previous studies on CRC in Iran demonstrated a very low prevalence (Haghighi et al., 1977; Vakili and Fatourehchi, 1976) the incidence of colorectal cancer is increased in Iran in recent years (Moghimi et al., 2008) and colorectal cancer will become increasingly important in the next decade.

The increasing incidence of colorectal cancer in Iranian immigrants to Canada was reported by Yavari et al ( 2006) suggests that genetic factors may not be playing an important role in the development of this disease in Iranian population. Another interesting finding is the younger age in both genders of colorectal patients, compared to gastric and esophagus cases. Data from the West emphasized that less than 20% of CRCs occur under 50 years (Crawford, 1991) but Iranian data suggested a younger age distribution compared to Western reports (Safaei et al, 2008).

Unfortunately in Iran, CRC screening is not done in general and patients are considered individually. So its incidence slightly increases. On the other hand screening for CRC can reduce mortality by early diagnosis (Walsh and Terdiman, 2003). It can be concluded that by considering the hospitalized GI tract cancers, prevention

programs like as CRC screening should be going on in order to reducing morbidity and incidence rates in high-risk populations for GI tract cancers.

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