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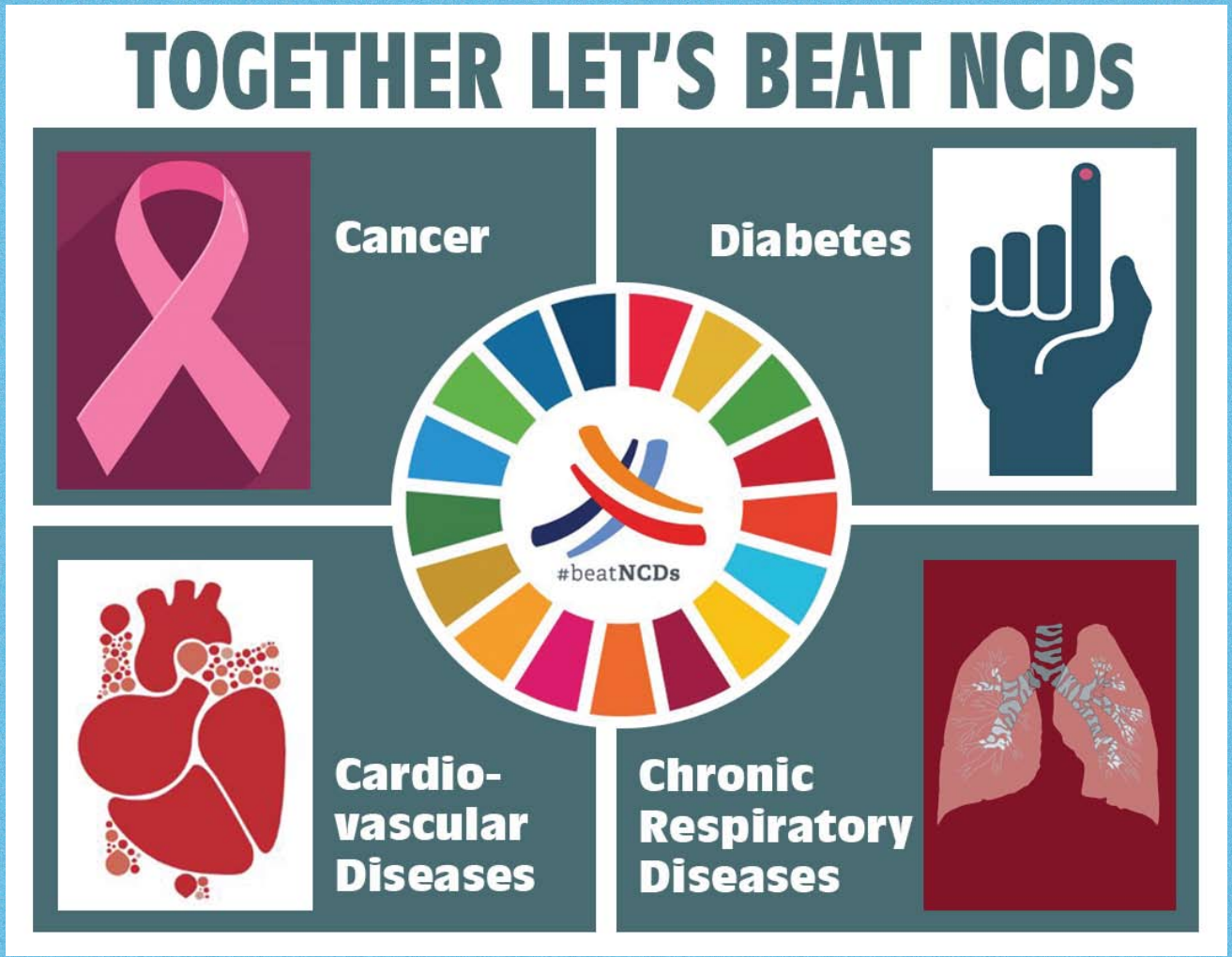

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Original Article

Prevalence of Stomach Cancer in Isfahan Province, Iran

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Abstract

Background: Due to nonspecific early symptoms, there is significant discrepancy related to the incidence of gastric cancer around the world. The aim of this study was to provide data related to period prevalence (PP) and incidence (Irs) of stomach cancer in Isfahan, Iran.

Patients and Methods: Information related to the Surveillance, Epidemiology, and End Results; (SEER) was collected from the Isfahan Cancer Registry. Period prevalence (PP) was calculated per 100000 persons. The cancer sites studied were defined according to the International Classification of Diseases (ICD–O; Third Edition) and recorded by topography code (C16).

Results: Among all registered stomach cancers, there were 2039 cases of gastric cancer including 68% males. The mean age of patients was 66.1 ± 14.8 years. Age reported stomach cancer was less than 50 years in 13%. With a total PP of 40.9, this value was 2 times higher in males when compared to females (54.5 Vs 26.8; $p<0.05$). Incidences were with values of: 9.9 (2011–2012), 10.6 (2012–2013), 10.3 (2013–2014) and 10 (2014–2015) per 100 000 persons, respectively. There were 45% reported death among total population.

Conclusion: The PP for stomach cancer in male population was approximately 2 times higher than females. There was an increase in the Irs over the study period. To facilitate early diagnosis for better management associated to pharmacotherapy or surgical care, our findings emphasized that health–care plans should focus on greater effort toward genetic and environmental factors in Isfahan Province/Iran.

Keywords: Stomach, Prevalence, Incidence, Isfahan, Iran.

Introduction

According to previous published reports stomach cancer was a leading cause of cancer–related deaths early in the 20th century and has steadily declined over the last century in the United States [1, 2]. According to previous publications, stomach cancer mentioned as the fourth most common cancer and the second leading cause of cancer–related death worldwide [3, 4, 5]. Diagnosed cases in year 2000 was reported as, 880000 people with an approximate death of 650000 [6]. Stomach tumors in 90% reported as adenocarcinomas. The more common type in males, blacks and older age groups reported as intestinal type.

About 90% of stomach tumors are adenocarcinomas. The intestinal type is more common in males, blacks, and older age groups, whereas the diffuse type has a more equal male–to–female ratio and is more frequent in younger individuals [7,8]. Although in developed countries, whites and higher socio–economic classes proximal tumor reported to be more common but in blacks and lower socio–economic groups report mentioned the higher incidence of distal gastric cancer [9].

Stewart et al., in 2009 reported that incidence rates related to gastric cancer may differ up to ten fold throughout the world [10]. Ahn YO et al., in 1991 and Yamamoto S, in 2001 reported that Japan and Korea have the highest gastric cancer rates in the world [11,12]. Associated to noncardia gastric adenocarcinoma, high incidence areas reported as East Asia, Eastern Europe, Central and South America Gastric cancer could be mentioned as a multifactorial disease connected to environmental or lifestyle factors [13, 14].

Study of gastric cancer by Malekzadeh R et al., in 2009 mentioned an annual incidence of gastric cancer in Ardabil versus Iran of 49.1 versus 26.1 for females and 25.4 versus 11.1 for males (age standardized rate per 100000 persons–year [15].

Mehrabani D et al., in 2013 studied the prevalence of gastric cancer in Shiraz, Southern Iran. Total reported

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Population studied	N	ELC, n	ED, n	Age, year, mean (SD)	PP	Ir (%) 2011–2012	2012–2013	2013–2014	2014–2015
Total	**2039**	**1118**	**921**	**66.1 (14.8)**	**40.9**	**9.9**	**10.6**	**10.3**	**10.0**
Females	659	333	326	65.6 (15.4)	26.8	6.6	6.6	6.5	7.2
Males	1380	785	595	66.4 (14.6)	54.6	13.2	14.5	14.1	12.8

Table 1. Demographic and epidemiological characteristics of the patients with stomach cancer.

ELC, estimated living cases; ED, estimated death.

cases in their study was 10,800 in which 69% were males. The mean age of patients was 58.1 ± 14.8 years and metastasis was visible in 182 patients [16]. This study aimed to investigate the prevalence of incidence of gastric cancer in Isfahan Province Iran.

Patients and Methods

Stomach cancers data from 2011 to 2015 were obtained from the Isfahan Cancer Registry, located at the Isfahan Deputy of Health. The study was conducted to the Isfahan Kidney Transplantation Research Center (IKTRC). approved by the Isfahan Deputy of Research Committee via the Ethics Committee Code Number of 295115. The Isfahan Cancer Program was intended to record all cancer cases in Isfahan. All pathology centers and other information sources such as hospital medical records, mortality data provinces, hematology–oncology centers, radiotherapy centers, etc., are obliged to report their data to the Isfahan Cancer Office of Disease Control and Prevention (CDC). The management arm of the program is the deputy of research in the Isfahan University of Medical Sciences. The cancer sites studied were defined according to the International Classification of Diseases (ICD–O; Third Edition). Stomach cancer were defined by topography code 16. Data, with linkage to using of the de–identified patient name and surname, demographic such as age and gender, final code for cancer diagnosis and date of reported cancer were recorded. The total population for Isfahan City was obtained from the Isfahan/ Program and Budget Management Organization. Cancer Period Prevalence (CPP) was calculated as the proportion of total cases over the period of the years 2011–2015/ to population at risk during the same time period x 100000. Cancer Incidence Rate (CIR) was calculated as dividing new cases of cancer during a given time period/ to population at risk during the same time period x 100000. The statistical analyses of d–Base was performed using Microsoft Excel and SPSS v. 20 (Chicago, IL, USA) for windows.

Results

Demographic and epidemiology characteristic of patients with stomach cancer are shown in Table 1. There were 2039 recorded cases, in which 68% were males.

Normality distribution of age was tested by the Kolmogorov–Smirnov test. The mean (SD; range) age was 66.1 (14.8; 6–101) years. As shown in Figure 1, the most incidences of stomach cancer (84%) occurred between the ages of 50–90 years. In the 13% of patients the reported age was less than 50 years old. The minimum reported age of males vs females was 6 vs 23 year old correspodingly.

The calculated PP was with a value of 40.9 per 100 000 persons, that corresponded to a PP of 26.8 per 100 000 females and 54.5 per 100 000 males (Chi squared test; $P < 0.05$) in Isfahan Province. Figure 2 shows the Irs for

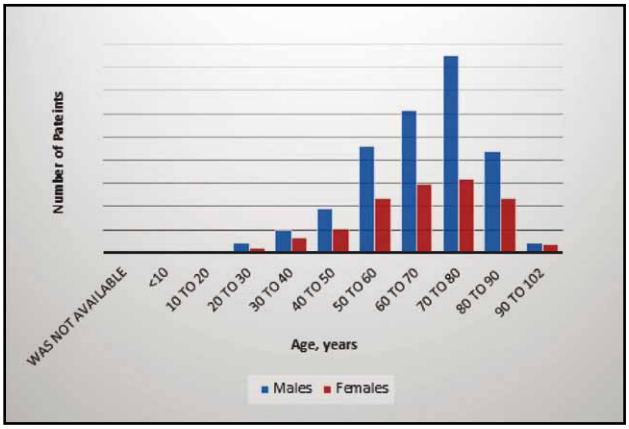

Figure 1: Age Distribution related to gender in pateints with stomach cancer.

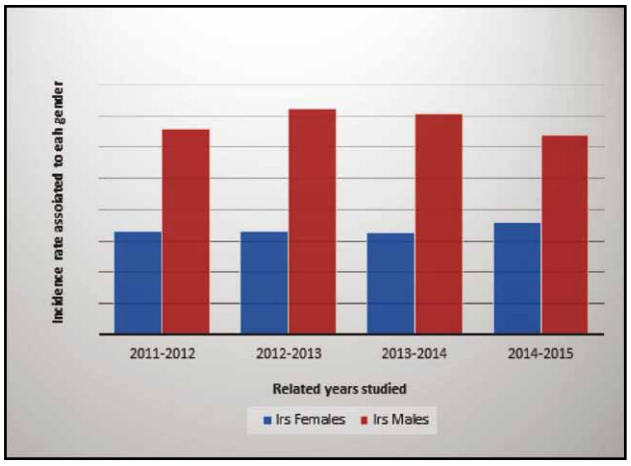

Figure 2: Incidence rate of stomach cancer associated to gender.

stomach caner between the years 2011–2015 associated to each gender. The Ir for the related years of study for both genders comprised of females vs males was: 9.9 (6.6 vs 13.2), 10.6 (6.6 vs 14.5), 10.3 (6.5 vs 14.1) and 10 (7.2 vs 12.8) per 100 000 persons, respectively. There were 921 recorded deaths (45%); that was corresponded to 326 females and 595 males.

Discussion

According to previous publication, analysis showed that depending on the geographical region, incidence (Ir) of stomach cancer varies widely. The high, medium and low values of Ir (per 100000 persons) for different region were mentioned as: 80–82 for Japan, 50 for Costa Rica, São Paulo, Brazil, and Cali, Colombia and less than 10 for Kuwait, Los Angeles, CA, USA, and Mexico correspondingly[17]. The risk in incidence of stomach cancer has decreased extremely over the past years [18, 19]. Geographic locations, racial and socio–economic grouping could affect the types of gastric tumor. Approximately two–thirds of stomach cancers were reported in developing countries [9].

In this study, the calculated PP for male population was 2.03 times higher than females (54.4 per 100 000 in men vs 26.8 per 100 000 in women; $p<0.05$). This is in agreement with publication from Japanese population that confirmed age–standardized incidence rates of 69.2 per 100 000 in men and 28.6 per 100 000 in women[4]. Another study showed that based on comparable progonostic fatcors, the survival for women would have been a little better that for men [18–22].

In this study the most incidence of gastric cancer that occurred around the age between 50 to 90 years, is in agreement with publication [23] from the U.S., that mentioned an average age of occurrence of 70 years. As mentioned before [23], rarely, does this cancer occur before the age of forty. In our study population, in the 13% of patients the reported age was less than 50 years old. The mean age of pateints with stomach cancer with a value of 66.1 ± 14.8 years in Isfahan is comparable to the mean reported age of Shiraz with a value of 58.1 ± 14.8 years[16].

As the majority of patients were older than 50 years, therefore treatment programs should focus on smoking habit or the level of socioeconomic patients with stomach cancer.

Conclusion

In Isfahan Province/Iran, stomach cancer frequently (84%) occurred around the ages between 50 to 90 years old with a total period prevalence of 40.9 per 100 000 person. This value was 2.03 times higher in males when compared to females. Out of total population studied, 45% of data were associated to deceased group.

Finally, our findings highlighted further attention of health care authorities toward prevention methods and evidence–based–pharmacotherapy associated to available and applicable regional strategy in Iran.

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