

Epidemiology of Cancer of Liver and Intrahepatic Bile Ducts Based on Fars Province Cancer Registry's Data, (2001-08)

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Article information	Abstract
<p>Article history: Received: 29 May 2011 Accepted: 24 Aug 2011 Available online: 28 Oct 2012 ZJRMS 2013; 15(2): 86-89</p> <p>Keywords: Liver cancer Standardized Incidence Rate Crude Incidence Rate</p> <p>*Corresponding author at: Department of Epidemiology, Faculty of Health, Arak University of Medical Sciences, Arak, Iran E-mail: Amiralmasi@arakmu.ac.ir</p>	<p>Background: Liver cancer is the fifth most common cancer in men and seventh most common cancer in women. This study aims at analyzing epidemiologically the liver and bile duct cancer in Fars province during 2001 to 2008.</p> <p>Materials and Methods: In this epidemiological study, the crude incidence rate (CIR) was measured per 100,000 people and the liver cancer's age-standardized incidence rate (ASR) was measured using direct standardization and world's standard population.</p> <p>Results: Out of 344 registered liver cancer cases, 54.4% were men and 45.6% were women. The ASR of liver cancer in 2008 was estimated 3.4 cases per 100,000 which has a significant ascending trend ($p=0.001$).</p> <p>Conclusion: The ASR in this study shows that like other countries in West Asia, Fars Province is categorized as a region with low incidence rate.</p>

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Introduction

In spite of achievements gained during the recent decades on controlling and preventing contagious diseases, incidence and outbreak rates of non-contagious diseases have been drastically increases [1], in a way that in most countries cancers are ranked as the second most common causes of death after cardiovascular diseases [2]. According to GLOBOCAN report, 12.7 million cancers and 7.6 million deaths caused by cancer had been recorded across the world in 2008; out of which 56% of new cases and 63% of deaths had been recorded in the developing countries [3]. In Iran, subsequent to cardiovascular diseases and incidents, cancer is the third most common cause of death [4] and in many cases, it is considered as one of the most important health problems [1, 5]. Liver cancer, which is the fifth most common cancer in men [3, 6] and seventh most common cancer in women [3], has a widespread distribution and threatens people's health severely [7, 8], as over 500,000 individuals across the world develop the disease annually [6, 9] and its 5-year mortality rate is more than 95% [9].

After lung and stomach cancers, liver cancer causes most deaths due to cancer with 696000 cases per year (9.2% out of all deaths caused by cancers) [3]. Today, the most important causes of the disease have been identified and are predictable in most cases [9]. Chronic hepatitis B and C infections are the main causes of the disease which account for over 75% of liver cancer cases [8-10]. Alcohol abusing is another cause of the disease [11, 12]. The world age-standardized incidence rate (ASR) of liver cancer for men and women are 16 and 6 cases per

100,000 people respectively. The rates for the developed countries are 8.1 and 2.7 and for the developing countries are 18.9 and 7.6 cases per 100,000 people [3]. According to a study conducted in Semnan, Iran [13], the ASRs of liver cancer for men and women are 5.8 and 3.5 cases per 100,000 people. The study is about to analyze epidemiologically the liver and bile duct cancer in Fars, Iran based on cancer cases recorded by the Health Deputy of the province.

Materials and Methods

The data used in this epidemiological study had been elicited from cancer record plan in Fars province which was conducted by Shiraz University of Medical Sciences during 2001 to 2008. In Fars province, all cancer cases were being recorded by the pathologic center before 2006, but after the time, the provisions for recording cancer cases have been provided based on demographic information. The information required for recoding cancer cases are gathered from both pathologic (80%) and non-pathologic centers (20%). It should be noted that there are about 60 pathologic centers in Fars province, out of which 48 centers are located in Shiraz City (the capital of Fars province).

The incidence rate per 100,000 people was measured and ASR has been calculated using direct standardization method and the world's standard population. The gathered data were coded through ICD-O method and cases which were related to code C22 had been examined. Cochran-

Armitage trend test and WinPepi 2.1 software were used to examine the incidence rate.

Results

During an eight-year period (2001 to 2008), a total of 463 cases of the liver cancer had been recorded by Fars province Cancer Registration Center, out of which 119 cases (25.7%) belonged to other provinces or were cases which have been recorded previously, so they were excluded from the study, 344 new cancer cases (54.4% for men and 45.6% for women) were used in this study. The estimated average age of patients with liver cancer was 57.3 years. Table 1 shows frequency distribution of patients by age and gender groups and also age average of patients during different years; people over 70 years old (both men and women) have had the highest rate of frequency (34.9%).

Table 1 also shows specific incidence rate with 95% confidence interval for male, female and all patients. As you can see in this table, the parameter is approximately equal for both genders. The ASRs during 8 years of study (2001 to 2008) were 0.9, 0.5, 0.3, 0.4, 0.9, 1.9, 2.9 and 3.4 per 100000 people, respectively. Cochran-Armitage Trend Test showed that the alteration trend of ASR of liver cancer has been significant ($p < 0.001$).

Also in Table 2, crude and standardized incidence rate for male, female and both sexes are shown, that the age standardized incidence rate during the eight years are

respectively; 0.9, 0.5, 0.3, 0.4, 0.9, 1.9, 2.9 and 3.4 cases per 100,000 people a year.

The results indicated that the incidence rate of the liver cancer in men and people over 70 years old is more than the other groups. In addition, the ASR of liver cancer in this population during 2001 to 2009 has been increased as large as 3.7 times.

Discussion

Regarding the ever-increasing trend of the non-contagious diseases, including liver cancer, it is necessary to consider various aspects of such diseases to identify and control their risk factors. Since liver and bile ducts cancer are of the common cancers and very lethal, in this study, we have tried to consider epidemiological aspects of the disease using data recorded by Fars province Cancer Registration Center from 2001 to 2008.

More men than women develop the liver cancer (54.4% men and 45.6% women) which is consistent with the results of other studies [3] in this field and a similar result has been reported by other studies carried out in Iran [4, 13]. For age group, this study showed that people over 70 years old develop the disease more than the other age groups. Babaie et al [13], set 60 years old as the last age group who develop the disease. Similarly, a study conducted in 2003 in Libya indicated that the age group over 65 years old had the highest incidence rate of liver cancer [14].

Table 1. Distribution frequency of liver in terms of gender during 2001 to 2008

Variable	2001	2002	2003	2004	2005	2006	2007	2008	Total
Male									
<40 yrs	5(19.2)	-	-	1(3.8)	4(15.4)	3(11.5)	7(26.9)	6(23.1)	26(14.4)
40-49	-	1(5.9)	1(5.9)	2(11.8)	-	5(29.4)	3(17.6)	5(29.4)	17(9.3)
50-59	3(8.6)	1(2.9)	3(8.6)	-	4(11.4)	4(11.4)	7(20)	13(37.1)	35(19.4)
60-69	5(14.3)	-	1(2.9)	2(5.7)	2(5.7)	9(25.7)	8(22.9)	8(22.9)	35(19.3)
+70 yrs	4(5.8)	1(1.4)	1(1.4)	2(2.9)	5(7.3)	10(14.7)	22(32.3)	23(33.8)	68(37.6)
Female									
<40 yrs	1(3.6)	2(7.1)	1(3.6)	-	3(10.7)	7(25)	5(17.9)	9(32.1)	28(18.2)
40-49	1(4.3)	1(4.3)	1(4.3)	-	3(13)	3(13)	7(30.4)	7(30.4)	23(15)
50-59	2(7.7)	1(3.8)	1(3.8)	-	3(11.5)	4(15.4)	8(30.8)	7(26.9)	26(16.8)
60-69	1(3.6)	4(14.3)	-	1(3.6)	1(3.6)	4(14.3)	7(25)	10(35.7)	26(18.2)
+70 yrs	2(4.08)	1(2.04)	-	3(6.1)	1(2.04)	7(14.2)	17(34.7)	18(36.7)	49(31.8)
Both sexes									
<40 yrs	6(11.1)	2(3.7)	1(1.9)	1(1.9)	7(13)	10(18.5)	12(22.2)	15(27.8)	54(16.1)
40-49	1(2.5)	2(5)	2(5)	2(5)	3(7.5)	8(20)	10(25)	12(30)	40(11.9)
50-59	5(8.2)	2(3.3)	4(6.6)	-	7(11.5)	8(13.1)	15(24.6)	20(32.8)	61(18.2)
60-69	6(9.5)	4(6.3)	1(1.6)	3(4.8)	3(4.8)	13(20.6)	15(23.8)	18(28.6)	63(18.8)
+70 yrs	6(5.5)	2(1.7)	1(0.85)	5(4.2)	6(5.1)	17(14.5)	39(33.2)	41(35.04)	117(34.9)
Age (Mean \pm SD)	52 \pm 22	51.5 \pm 19	51.2 \pm 15	61.3 \pm 20	50.7 \pm 21.4	55 \pm 21	60.6 \pm 18	59.2 \pm 19	57.3 \pm 20

Table 2. Sex specific and age Standardized incidence rate of liver cancer if Fars province, 2001-08

Year	Number of new cases			Incidence rate (per 100,000)					
	Male	Female	Total	Sex specific incidence rate			Age standardized rate (ASR)		
				Male	Female	Total	Male	Female	Total
2001	17(70.8)	7(29.2)	24(7.1)	0.82	0.35	0.59	1.3	0.5	0.9
2002	3(25)	9(75)	12(3.6)	0.14	0.44	0.29	0.2	0.7	0.5
2003	6(66.6)	3(34.4)	9(2.7)	0.28	0.15	0.22	0.4	0.2	0.3
2004	7(63.6)	4(36.4)	11(3.3)	0.32	0.19	0.26	0.5	0.3	0.4
2005	15(57.6)	11(42.4)	26(7.7)	0.68	0.52	0.6	1	0.7	0.9
2006	34(57.6)	25(42.4)	59(17.5)	1.54	1.17	1.3	2.1	1.7	1.9
2007	47(51.6)	44(48.4)	91(26.9)	2.1	2.04	2.07	2.9	2.8	2.9
2008	55(51.8)	51(48.2)	106(31.4)	2.4	2.3	2.3	3.3	3.4	3.4

The study showed that the ASR of liver cancer during the eight years to be 0.9, 0.5, 0.3, 0.4, 0.9, 1.9, 2.9, and 3.4 per 100,000 people in 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008, respectively. The ASR of liver cancer in this population during 2001 to 2009 has been increased as large as 3.7 times. Such alterations, like other parts of the world, are partly caused by the increasing trend of incidence rate of cancer during the time (real changes) and partly due to the different methods of collecting information (based on population) from 2006 onwards, the possible changes in diagnosis techniques, justifying physicians and the related institutes and their increased knowledge on importance of reporting doubtful cases (unreal changes). Considering the results, it can be concluded that the cancer recording system in Fars province was incomplete because of its dependence on reports of the pathologic centers during early years of our study, so we have not been able to identify and record all new-diagnosed cases, while the measured rates from 2006 onwards show that today a semi-complete cancer registration system has been installed there and incidence rate of the liver cancer is very close to its actual incidence rate in the population.

With regard to the several training workshops which have been recently held across the province with the aim of training specialists, pathologists and physicians on how much reporting cancer cases is important, it can be claimed that the cancer registration coverage in this province is acceptable; however, a few patients living in the province may refer to the other provinces for treatment.

The age-standardized incidence rate of the liver cancer has reached 3.4 cases per 100,000 people in the Fars province. The ASR of liver cancer in other parts of the world, according to the report of GLOBOCON in 2008 [3] and other studies in Iran (Semnan [13], Ardabil [15] and the entire Iran during 2003 -2006 [14]) has been shown in table 3. As table 2 shows, East and Southeast Asia, Central and West Africa have the highest rate of incidence while the lowest rates belong to the developed countries (barring south Europe). Different method of

recording cancer during the years of study, a number of patients' referral to the other provinces and also the cases which had not been reported by the diagnostic centers are some constraints of the study.

Table 3. Comparing ASR of liver cancer in different parts of the world [3] and Iran

Regions	Male	Female
World	16	6
Developed countries	8.1	2.7
Developing countries	18.9	7.6
Central America	7.3	7
North America	6.8	2.2
South America	5.3	3.9
East Asia	35.5	12.6
Southeast Asia	21.4	9
West Asia	4.4	2.3
Northern Europe	3.8	1.6
Western Europe	7.2	2.1
Southern Europe	9.8	3.2
Central and Eastern Europe	4.6	1.9
East Africa	7.2	3.6
Central Africa	18.9	9.6
North Africa	7.5	2.5
South Africa	13.9	5.1
West Africa	16.5	8.1
Iran [4]	0.55	0.43
Ardebil [15]	1.6	2.3
Semnan [13]	5.8	3.5
Our study	3.3	3.4

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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