

Trend of bladder cancer mortality in Iran (2006 to 2010)

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ABSTRACT

Background and aims: Bladder cancer is the most common tumor of the urinary tract and the ninth cancer in terms of incidence in both sexes in the world. Bladder cancer is the second most common cancer among men in Iran. The most important risk factors which attribute to the incidence of bladder cancer are tobacco usage, exposure to industrial materials, and chronic infection by Schistosoma. This study aimed to investigate the trend of death from bladder cancer in Iran.

Methods: This study was conducted by the use of data on mortality in Iran during 2006-10. Data on mortality from cancer within the study period were collected and entered on a pre-designed form. Mortality rates per 105 persons were calculated by age group and sex, and the trend of mortality from this cancer was determined.

Results: The results from the calculation of mortality rates per 105 persons indicated that the death rate from bladder cancer is reduced from 1.12 to 1.09. The mortality rates during all the years under the study showed that increasing age increases the bladder cancer in men.

Conclusion: No particular change was observed in the analysis of the trend of tobacco using in Iran in the last two decades, which can be considered as one of the causes of constancy of mortality trend from bladder cancer. However, given the increase in the number of people over 65 and the observed growing trend in bladder cancer incidence in various regions of the country, it is recommended that health policies are adopted in order to prevent the risk factors behind this type of cancer such as tobacco and harmful industrial materials.

Keywords: Bladder cancer, Trend, Mortality, Iran, Epidemiology.

INTRODUCTION

Nowadays, cancer is the second leading cause of death worldwide. In most countries, the incidence rate of cancers is increasing,

which can be attributed to the aging of the population, and changes in lifestyle in cases such as smoking, physical activity, obesity,

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and stress.^{1,2} Among cancers, bladder cancer is the most common tumour of the urinary tract, the ninth cancer in terms of incidence in both sexes in the world, the seventh leading cancer in men and the seventeenth in women.^{3,4} Bladder cancer is responsible for 7% and 2% of new cases of cancer in men and women respectively.⁵ According to the latest statistics, 386,300 new cases and 150,200 deaths worldwide in 2008 were reported for bladder cancer.⁶ Europe, North America and North Africa show the highest incidence.⁷ Incidence rate specific to bladder cancer in the Southeast Asia is found as 4.5 and 1.3 per 105 in men and women respectively.⁷ Bladder cancer is the second most common cancer in Iranian men with age-standardized incidence rate of 11.53 per 105, and 2.92 per 105 in Iranian women.⁸

The highest death rate from bladder cancer in the world is found in Egyptian men with 16.3 per 105 persons. This rate is twice the highest mortality rate in Europe (8.3 per 105 in Spain and 8 per 105 in the Netherlands) and more than four times the rate of death in United States of America with 3.7 per 105 persons per year.⁶ In Europe, the highest mortality rate in women has been observed between 2-3 per 105 women in Denmark and England. In Iran, the rate of death from this cancer is 1.7 in men and 0.5 in women and is calculated as 1 per 105 populations in both sex groups.^{8,9}

Smoking and exposure to industrial materials are regarded as the most important risk factors for bladder cancer in developed countries.^{7,9-11} Smoking is responsible for 30-50% and exposure to industrial materials for 20% of all cases of bladder cancer which have been identified in the world.^{5,7} However, chronic infection by *Schistosoma* is the most important risk factor in developing countries, especially in Egypt and Africa where this factor attributes to 50% of

all cases of this cancer.^{4,6} The risk of bladder cancer incidence in smokers generally is 2-4 times more likely than non-smokers.⁹

Because the information of the disease mortality is essential for health planning, the aim of this study was to estimate the rate and trend of deaths from bladder cancer in Iranian population during 2006-10 years in order to present an overview of the rate of deaths due to this cancer in Iran.

METHODS

The present study was cross-sectional using data on mortality in Iran during 2006-10. Data were collected by Technology and Applied Research and Information Management Centre of the Ministry of Health and Medical Education from various sources including National Organization for Civil Registration, cemeteries, hospitals, and care homes. The necessary data integration has been performed in the Ministry of Health and Medical Education.¹²

In the present study, the data on the number of deaths from bladder cancer during 2006-10 in 29 provinces of Iran were obtained based on mortality in Iran after removing empty codes, and were entered in a pre-designed form. Number of deaths, mortality rate, male/female mortality ratio, and mortality rates in the age and sex groups were calculated and reported. Moreover, a picture of the trend of changes in mortality due to bladder cancer in Iran was drawn.

RESULTS

The present study has analysed the data on all deaths from bladder cancer in 2006 to 2010 in all age and sex groups. During this period, 3075 cases of deaths from bladder cancer have been reported. 2354 cases of death were observed in men and 722 in women. Most cases of death in men have

occurred in 2006 with 504 cases reported and in women in 2006 with 166 cases. The statistics showed that the number of deaths in men is higher than women, and sex ratio of 3.26 was obtained in all the years under the study. Results from the calculation of mortality rates per 100,000 persons showed that mortality rate from bladder cancer was 1.12 in 2006 and 1.09 in 2010. According to Table 1 and Figure 1, mortality rates during all the years under the study showed a relatively steady trend of bladder cancer in men and women. The rate in men was 1.74/105 in 1385 and 1.57/105 in 2010. The rate in women has reached from 0.49 in 2006 to 0.60 in 2010.

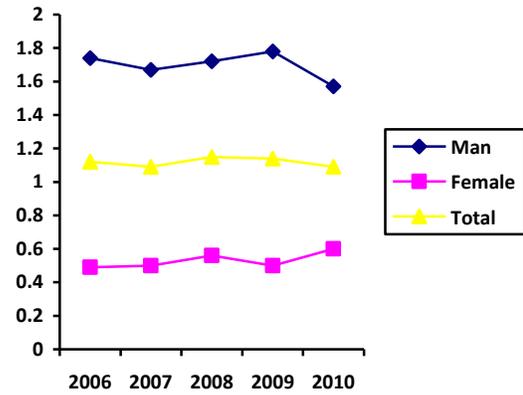


Figure 1: The rate of death from Bladder cancer per hundred thousand people in the study group sex

Table 1: Mortality from Bladder cancer per hundred thousand people in the study group sex

Year of study	Mortality per hundred thousand			Crude mortality rate			Sex ratio
	Woman	Men	Total	Woman	Men	Total	
2006	0.49	1.74	1.12	138	504	642	3.65
2007	0.50	1.67	1.09	132	451	582	3.41
2008	0.56	1.72	1.15	151	470	621	3.11
2009	0.50	1.78	1.14	135	490	625	3.62
2010	0.60	1.57	1.09	166	439	605	2.64
Total				722	2354	3075	3.26

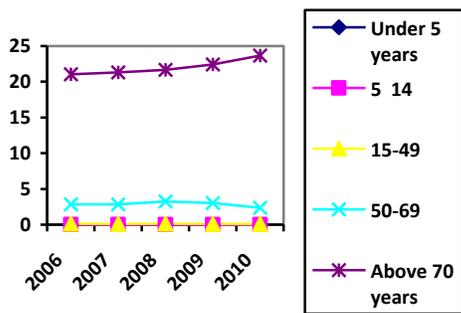


Figure 2: The rate of death from bladder cancer per hundred thousand people in the age groups studied

Calculation of mortality rate due to bladder cancer in Table 2 and Figure 2 in all the years under the study in age and sex groups showed that the rate of death from this cancer increases with age. The lowest death rate due to the cancer has been reported in the age group below 5 years and 14-5 years, while mortality rate from the cancer has increased with age and in the age group above 70 years, and has grown from 21.2/105 in 2006 to 23.68/105 in 2010.

Table 2: The rate of death from Bladder cancer per hundred thousand in the year under study, by sex and age group

Year of study	Under 5 years			5-14			15-49			50-69			Above 70 years		
	W	M	T	W	M	T	W	M	T	W	M	T	W	M	T
2006	0	0	0	0	0	0	0.06	0.23	0.14	1.24	4.47	2.84	9.60	30.96	21.02
2007	0	0	0	0	0	0	0.04	0.17	0.11	0.92	4.79	2.83	11.51	29.90	21.29
2008	0	0	0	0	0	0	0.07	0.16	0.12	1.35	5.18	3.24	11.41	30.85	21.67
2009	0	0	0	0	0	0	0.02	0.19	0.11	1.29	4.79	3.01	10.52	33.26	22.43
2010	0	0	0	0	0	0	0.04	0.13	0.08	1.27	3.82	2.36	13.65	32.95	23.68

DISCUSSION

The results indicate a steady trend from 1.12/105 in 1385 to 1.09/105 in 2010 for the mortality rate from bladder cancer in Iran over the five-year period. The trend corresponds with the bladder cancer mortality trend in Spain;¹³ whereas, bladder cancer mortality and incidence has followed a downward trend in Europe and America due to the decline in the prevalence of tobacco use.⁶ The rate of tobacco consumption in America has decreased from 52% in 1965 to 28% in men and from 34% to 23% in women. In Europe, the same rate has declined by approximately 16% in men and 12% in women over the last decade.⁴ In Algeria, the prevalence of smoking in men during 1978-2005 has increased from 7.7% to 28.6%, and at the same time bladder cancer in men has experienced a growth rate of 5.9%. The rate has increased by 3.5% in the age group of 45-64 years but it has been equivalent to 8% in the age groups above 65 years.¹⁴ In Western countries, tobacco consumption has been identified as the cause of 50% of bladder cancer cases in men and 35% of bladder cancer cases in women. Changes in the prevalence of tobacco use have been the most important cause of the decline of this cancer incidence and mortality in Europe and America.^{4,7,9} Unfortunately, based on the geographical map, tobacco consumption has shifted away from developed countries to

developing countries. The World Health Organization has reported increased tobacco consumption among men and women in most developing countries in the world such as Africa, the Middle East, Eastern Europe and some Asian countries and Australia. The result is an increase in bladder cancer incidence and mortality in these countries. It should be noted that the main burden of bladder cancer falls on the developed countries at the present time. However, due to the developing countries' increased exposure to this cancer, the burden is expected to be transferred to these countries.⁴ However, no particular change has been observed in the study of the trend of tobacco use in Iran in the past 2 decades. Based on the studies, the prevalence of tobacco consumption in Iran has been totally 14.6% in 1991 (27.2% in men and 3.4% in women) and 14.8% in 2007 that 26.1% of the total rate has been reported in men and 3.2% in women.¹⁵ While in the studies carried out in Chile, mortality rate from bladder cancer caused by exposure to arsenic in water has been.¹⁰

In Egypt, mortality and morbidity from bladder cancer has significantly decreased due to the control of chronic infection by *Schistosoma*, but unfortunately part of this decrease was offset by an increase in tobacco use.⁶ Bladder cancer incidence and mortality has followed a growing trend in Algerian men but a steady trend in women.¹⁴ Bladder cancer

is routinely observed at older ages so that more than 90% of the cases are identified in persons above 55 years old.⁴ According to the results obtained from the study, the calculation of bladder cancer mortality rates in different age groups shows that the rate of death caused from this cancer increases with age and most cases of death have been reported in the age group above 70 years old. A large number of studies have suggested that the bladder cancer risk is the highest among people aged about 60-70.¹⁶ Based on the studies conducted in Algeria, it is observed that the bladder cancer incidence has over 8% growth rate in the age group above 65 years old.¹⁴ It seems that given the high incidence of bladder cancer in persons over the age of 60, death rate from the cancer is higher among cases over 70 years of age.

Bladder cancer is the second most common cancer in men in Isfahan and the third leading cancer in Markazi province.^{17,18} In the East Azerbaijan province, bladder cancer in men is the second and in the general population is the third leading cancer, the age-standardized incidence rate is 16.76/105 in men, 5/105 in women and 11.2/105 in general population.³ In Yazd and Kurdistan, bladder cancer is the fourth leading cancer in both sexes with prevalence rate of 7.5%, and it is the second common cancer in men in Yazd with prevalence rate of 11.7%.^{19,20} The highest cancer incidence rate per 100000 persons in the elderly over the age of 60 years old in Iran over a 5-year trend has been related to bladder cancer in Kermanshah province.²¹

All over the world, bladder cancer in men is 3-4 times more than women (5,7), which corresponds to the study carried out by Akbarzade in Mazandaran and male/female ratio in Beigi's study was 5.5.^{11,22} The results of this study show that the number of deaths from bladder cancer in men is larger than in women and men are at a greater risk of death from bladder cancer. The sex ratio estimated in the study is 3.26 which is corresponded to the study conducted by Mousavi. In Mousavi's

study, the mortality rate from bladder cancer in Iran was 1.7/105 in men and 0.5/105 in women.⁸ Bladder cancer mortality rate in Spain in men is 5 times more than women and this rate corresponds to the results of the study.¹³ The higher rate of death from bladder cancer in men corresponds to age standardized mortality rate in the developed and developing regions.⁶ However, due to the increase in the number of people over 65 years old and the observed growing trend in bladder cancer incidence in various regions of the country, it is recommended that health policies are adopted in order to prevent risk factors behind this type of cancer such as tobacco and harmful industrial materials.^{3,5,8}

CONFLICT OF INTEREST

All contributing authors declare no conflicts of interest.

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