

Trends in the incidence rate of genitourinary system cancers in Turkey: 2004–2015

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ABSTRACT

Objective: To analyze age-standardized urological cancer incidence rates in Turkey during the last twelve years based on the available published data (2004–2015).

Material and methods: Cancer data were obtained from the reports of Turkish Directorate of Public Health Cancer Department for 2004–2015. A trend analysis was conducted using the joinpoint regression analysis to observe the change in the trends over time. The average annual percentage of change, annual percent change, and the corresponding 95% confidence interval were calculated.

Results: Throughout the observed period, cancer incidence rates in men significantly increased by 3.04%, 4.70%, 4.03%, and 2.97% for all the genital organs, kidney, testis, and prostate, respectively. A significant increase of 3.11% and 1.91% was observed for the urinary system organs and bladder, respectively, of women during the same period.

Conclusion: The increase in the incidence rate of urinary system cancers was more prominent than that of all cancers types in general. The total incidence rate of urinary system cancers (bladder and kidney) tends to increase more in women than in men. While there was no cancer with decreased incidence during the entire study period, similar decreases in some urogenital cancer types tended to occur during the second trend period.

Keywords: Genitourinary cancer; urogenital neoplasms; urologic cancer.

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Introduction

Cancer is one of the leading public health problems worldwide, and according to the estimates of the World Health Organization (WHO), in 2015, it is the first or second most common cause of death before the age of 70 in 91 of 172 countries.^[1] With the aging and growth of the population, the incidence of cancer and deaths due to cancer increases. In Turkey, it has been the second cause of death for more than the last decade.^[2]

According to Globocan 2000^[3], there were 10.1 million new cases, 6.2 million cancer-related deaths, and 22 million people living with cancer (within 5 years of diagnosis). It revealed a 22% rise in the incidence and mortality estimated in 1990.^[4] According to Globocan 2018, 18.1 million new cases and

9.6 million cancer deaths were estimated in 2018 (excluding nonmelanoma skin cancer).

^[1] In 2018, lung cancer was the most common cancer type (11.6/100,000) and the leading cause of cancer-related deaths (18.4/100,000), followed by female breast (11.6/100,000), colorectal (10.2/100,000), and prostate cancers (7.1/100,000). In terms of mortality, lung cancer was followed by colorectal (9.2/100,000), stomach (8.2/100,000), and liver cancers (8.2/100,000). From 2000 to 2018, the number of people with cancer was estimated to increase by 79% and the number of people who died from cancer increases by about 54% throughout the world.

In Turkey, the Department of Fight Against Cancer was established in 1983. Turkey became a member of the International Agency for Research on Cancer (IARC) of the WHO

Table 1. Annual (age standardized by sex) incidence rates of urogenital cancer in men between 2004 and 2015 (Integrated Database: 2004–2015) (Standard Population: per 100,000 people)

ICD 10	Tumor location	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
C60–63	Male genital organs	27.5	31.2	32	35.8	41.2	39.2	37.2	40.9	43.2	40.2	36.7	36.8
C60	Penis	0.1	0	0	0.1	0.1	0	0	0	0.1	0	0	0
C61	Prostate	24.9	28.6	28.9	32.3	37.6	36.1	33.8	37.1	39.2	36.4	32.9	33.1
C62	Testis	2.5	2.6	3.1	3.3	3.4	3.1	3.4	3.7	3.8	3.7	3.7	3.7
C63	Other male genital organs	0	0	0	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0
C64–68	Urinary system organs	24	25.2	27	28.6	28.1	28.3	26.6	28.6	29.9	28.8	26.3	27.5
C64	Kidney	4.1	4.1	5.5	5.2	5.8	6.3	5.5	6.9	7	7	6.4	6.8
C65	Renal pelvis	0.3	0.2	0.2	0.4	0.3	0.3	0.2	0.4	0.3	0.3	0.3	0.2
C66	Ureter	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2
C67	Bladder	19.3	20.6	21	22.5	21.7	21.4	20.7	20.9	22.3	21.1	19.3	20.2
C68	Other urinary system organs	0.1	0.2	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1

in 1989 and Izmir cancer registry data were certificated by WHO-IARC for Globocan in 2002.^[5,6] Then, Turkey became a member of the Middle East Cancer Consortium in 2004.^[6] The active registry system was implemented in 2002 in eight provinces covering 20% of the whole population. Consequently, the population coverage of samples exceeded 50% in 2012.^[7]

In Turkey, according to Globocan 2018 estimates, almost one of four women had newly diagnosed breast cancer (22,345 cases), and nearly one of four men had recently diagnosed lung cancer (29,405 cases).^[8] Also, lung cancer was the most newly diagnosed cancer in 2018, both in Turkey and the world. Although prostate cancer was ranked fourth among the newly diagnosed cancers, age-standardized (world, per 100,000 person-years-ASR) incidence rate ranking revealed it as the second most frequent cancer (41.7) and the second cause of cancer death in men (11.9) in Turkey.

Statistics both in Turkey and the world indicate that cancer incidence and mortality is gradually increasing. Since cancer is one of the world's leading public health problems, cancer statistics and the trend over time need to be evaluated to control cancer through health policies. Therefore, this study aimed to analyze urological cancer incidence trends in Turkey during the last 12 years based on the available published data (2004-2015).

Material and methods

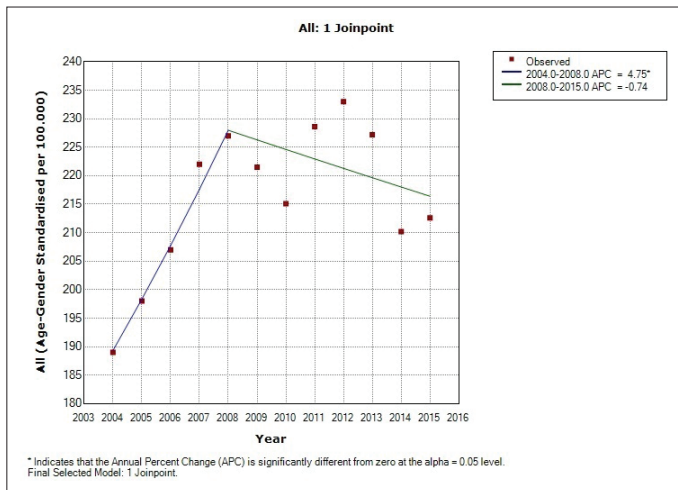
Cancer data for Turkey were obtained from the reports of Turkish Directorate of Public Health Cancer Department for 2004-2015.^[9] (Annual incidences cover 12 months (1 January-31 December)). The incidence rates have been reported in terms of yearly age-standardized and age sex-standardized per 100,000 people (WHO standard population) by the institution. Urological cancer codes are defined according to the International Classification of Diseases 10th revision (C60-C68) for the study period (Tables 1 and 2). Initially, a joinpoint regression analysis was conducted for all types of cancers in men and women to find out the change in the trends over time. Annual age-standardized and age-sex-standardized incidence rates per 100,000 people (WHO standard population) were used to describe trends with the joinpoint regression analysis. More emphasis was given to the urinary system cancers of both sexes and genital cancers of men. Changes in the trends of the incidence of the kidney and bladder cancers were analyzed as the urinary system cancers. Prostate and testis cancers were chosen to analyze as male genital cancers. The incidence of other organ

Main Points:

- Throughout the observed period, genital organs, kidney, testis, and prostate cancer incidence rates in men significantly increased.
- A significant increase was also observed for bladder and the urinary system organs cancer incidence rates of women during the same period.
- While there was no cancer with decreased incidence during the entire study period, similar decreases in some urogenital cancer types tended to occur during the second trend period (2008-2015).

Table 2. Annual (age standardized by sex) incidence rates of urogenital cancer in women between 2004 and 2015 (Integrated Database: 2004–2015) (Standard Population per 100,000 people)

ICD 10	Tumor location	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
C64–68	Urinary system organs	4.5	5.5	5.1	6.1	6.2	6.5	6.2	6.5	7	6.5	6.4	6.4
C64	Kidney	2.2	2.9	2.4	3.2	3	3.5	3	3.5	3.6	3.4	3.3	3.2
C65	Renal pelvis	0	0	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1
C66	Ureter	0	0	0	0	0	0.1	0	0.1	0.1	0	0.1	0
C67	Bladder	2.3	2.6	2.6	2.8	3	2.9	3	2.8	3.1	2.9	2.8	3.1
C68	Other organs	0	0	0	0	0.1	0	0.1	0	0.1	0.1	0.1	0

**Figure 1. Trend in age-sex-standardized all-type cancer incidence rates in Turkey during 2004–2015: a joinpoint regression analysis**

cancers related to the genitourinary system was either zero in some years and/or had a constant trend in the relevant time period. For this study period, changes in the incidence rates of cancers in Turkey (2004–2015) and in the whole world (2002–2018) were obtained from the Globocan statistics.^[1,10,11]

Statistical analysis

The joinpoint regression analysis was used to analyze the change in trends over time. The analysis was carried out using Joinpoint Regression Programme^[12], version 4.7.0.0 February 2019, provided by the Surveillance, Epidemiology and End Results Program, by US National Cancer Institute. The analysis, first proposed by Kim et al.^[13], aimed to find nonlinear trends during the study period in the 2000s. Trends like cancer mortality and incidence rates do not have a linear path in a given time period; usually, they have a segmented trend. Thus, the joinpoint regression is used to find the significance of the slope of the trend over time. The points where significant changes

take place are called “joinpoints.” The significance levels are found using Monte Carlo methods with Bonferroni corrections.^[13] The analysis begins with the minimum number of joinpoints and identifies any other possible time points if there are any. The annual percent change (APC) with its 95% confidence interval (CI) and average annual percent change (AAPC) with its 95% CI were estimated for each identified trend. AAPC is a geometric mean of the annual changes from all of the partitions.^[14]

In the study, each trend was calculated by fitting a regression line to the natural logarithm of the rates and using the calendar year as a regression variable. The parameters were allowed for one joinpoint because of using a short period. During the analyses, constant variance (homoscedasticity) was assumed. The analyses were applied with a significance level of 5%.

Results

The annual incidence rates of urogenital cancers analyzed according to the International Classification of Diseases (ICD-10) are provided in Tables 1 and 2.

The results of the joinpoint regression analysis, the APC, and the AAPC trends in all types of cancers during 2004–2015 are provided in Table 3 and shown in Figures 1–3. Age-sex-standardized cancer incidence and age-standardized male and female cancer incidences with one joinpoint each were found to best fit the model (Table 3, Figures 1–3). The incidence of all types of cancers presented a significant increase of 4.75% (95% CI 0.95, 8.69) per year during 2004–2008, but nonsignificantly decreased by 0.74% (95% CI –2.28, 0.82) per year from 2008 to 2015. For men, cancer incidence presented a significant increase of 6.24% (95% CI 0.41, 12.42) per year during 2004–2007 and a nonsignificant decrease of 1.22% (95% CI –2.43, 0.01) per year from 2007 to 2015. For women, cancer incidence presented a significant increase of 3.16% (95% CI 2.02, 4.33) per year from 2004 to 2012 and a nonsig-

Table 3. Trends in all-type cancer incidence rate between 2004 and 2015: joinpoint regression analysis

All cancers	Trend 1			Trend 2			2004–2015		Changes in incidence rates	
	Years	APC (95% CI)	P	Years	APC (95% CI)	p	AAPC (95% CI)	p	Turkey 2004–2015 (%)	Globocan 2002–2018 (%)
All cancer	2004–2008	4.75 (0.95, 8.69)	0.02*	2008–2015	-0.74 (-2.28, 0.82)	0.30	1.22 (-0.17, 2.63)	0.09	12.49	8.86 ^a
Males	2004–2007	6.24 (0.41, 12.42)	0.04*	2007–2015	-1.22 (-2.43, 0.01)	0.05	0.76 (-0.72, 2.26)	0.31	4.78	4.29
Females	2004–2012	3.16 (2.02, 4.33)	<0.001	2012–2015	-2.43 (-7.31, 2.7)	0.29	1.61 (0.25, 2.98)	0.02*	24.21	13.07

^a2008 numbers were used instead of 2002. *p<0.05. APC: annual percent change; AAPC: average annual percent change

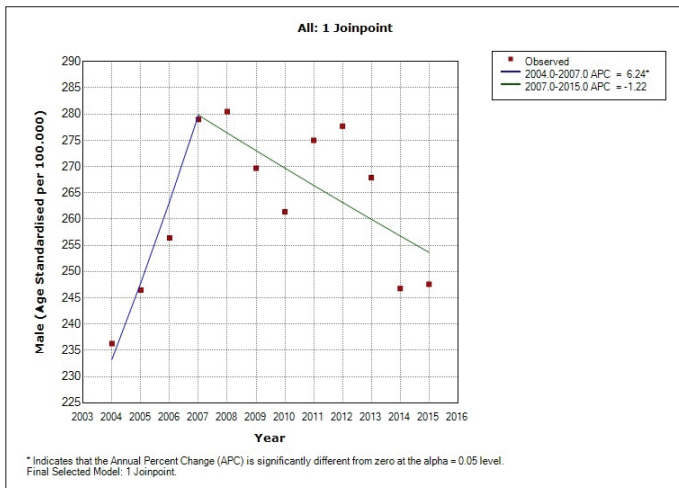


Figure 2. Trend in age-standardized all-type cancer incidence rates for men in Turkey during 2004–2015: a joinpoint regression analysis

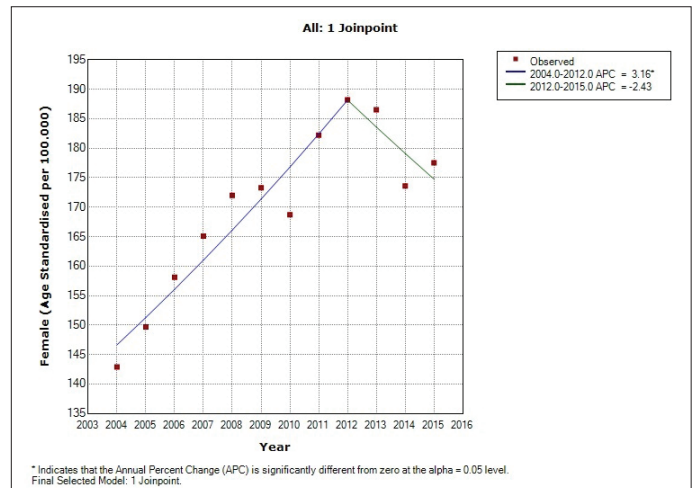


Figure 3. Trend in age-standardized all-type cancer incidence rates for women in Turkey during 2004–2015: a joinpoint regression analysis

nificant decrease of 2.43% (95% CI -7.31, 2.7) per year from 2012 to 2015. In the entire observed period, cancer incidence nonsignificantly increased by 1.22% (95% CI 0.17, 2.63). The increase in cancer incidence in men was found to be 0.76% (95% CI -0.72, 2.26), which was not significant. However, the 1.61% (95% CI -0.25, 2.98) increase in cancer incidence in women was significant.

The results of the joinpoint regression analysis of male genital organ cancers, the APC, and the AAPC trends during 2004–2015 are provided in Table 4 and shown in Figures 4–6. The incidence of whole genital cancers in men, on average, significantly increased since 2004 by 3.04% (95% CI 0.74, 5.4) per year. Among these, the incidence of prostate cancer had a significant increase of 2.97% (95% CI 0.58, 5.42) and the incidence of testis cancer had a significant increase of 4.03% (95%

CI 1.73, 6.38) per year. In addition, the final model selected for male genital organ cancers detected one joinpoint for the study period. The incidence of male genital cancers presented a significant increase by 10.04% (95% CI 3.60, 16.88) and prostate cancer by 10.25% (95% CI 3.55, 17.38) per year from 2004 to 2008. There was a 9.95% (95% CI 0.94, 19.76) increase in testis cancer per year from 2004 to 2007, which was also significant. Then, the incidence of male genital cancers together with prostate cancer decreased by 0.75% (95% CI -3.25, 1.81) and -0.97 (95% CI -3.56, 1.69) per year from 2008 to 2015, respectively, but this increase was not statistically significant. The incidence of testis cancer significantly increased by 1.89% (95% CI 0.01, 3.81) per year from 2007 to 2015.

The results of the joinpoint regression analysis of the urinary system cancers, the APC, and the AAPC trends during 2004–

Table 4. Trends in male genital organ cancer incidence rate between 2004 and 2015: joinpoint regression analysis

Male genital organs	Trend 1			Trend 2			2004–2015		Changes in incidence rates	
	Cancer type	Years	APC (95% CI)	p	Years	APC (95% CI)	p	AAPC (95% CI)	Turkey 2004–2015 (%)	Globocan 2002–2018 (%)
All male genital organs	2004–2008	10.04 (3.60, 16.88)	0.01**	2008–2015	–0.75 (–3.25, 1.81)	0.50	3.04 (0.74, 5.40)	0.01**	33.82	18.66
Prostate	2004–2008	10.25 (3.55, 17.38)	0.01**	2008–2015	–0.97 (–3.56, 1.69)	0.41	2.97 (0.58, 5.42)	0.01**	32.93	15.81
Testis	2004–2007	9.95 (0.94, 19.76)	0.03*	2007–2015	1.89 (0.01, 3.81)	0.05*	4.03 (1.73, 6.38)	<0.001	48.00	13.33

*p≤0.05, **p≤0.01, APC: annual percent change; AAPC: average annual percent change

Table 5. Trends in urinary system organ cancer incidence rate between 2004 and 2015: joinpoint regression analysis

Urinary system organs	Trend 1			Trend 2			2004–2015		Changes in incidence rates	
	Cancer type	Years	APC (95% CI)	p	Years	APC (95% CI)	p	AAPC (95% CI)	Turkey 2004–2015 (%)	Globocan 2002–2018 (%)
Urinary system organs-men	2004–2007	5.93 (–1.24, 13.62)	0.09	2007–2015	–0.35 (–1.86, 1.19)	0.61	1.33 (–0.51, 3.20)	0.16	14.58	5.41
Urinary system organs-women	2004–2008	8.15 (1.87, 14.82)	0.02*	2008–2015	0.34 (–2.16, 2.91)	0.76	3.11 (0.83, 5.45)	0.01**	42.22	10.00
Kidney-men	2004–2014	4.70 (2.78, 6.66)	<0.001	-	-	-	4.70 (2.78, 6.66)	<0.001	65.85	27.66
Kidney-women	2004–2012	4.74 (3.12, 6.39)	<0.001	2012–2015	–4.57 (–13.46, 5.24)	0.30	2.12 (–0.31, 4.6)	0.09	45	24.00
Bladder-men	2004–2007	4.40 (–1.83, 11.03)	0.14	2007–2015	–1.20 (–2.41, 0.02)	0.05	0.29 (–1.27, 1.89)	0.36	4.66	–4.95
Bladder-women	2004–2008	5.56 (2.64, 8.56)	<0.001	2008–2015	–0.12 (–1.15, 0.93)	0.79	1.91 (0.89, 2.94)	<0.001	34.78	–4.00

*p≤0.05, **p≤0.01, APC: annual percent change; AAPC: average annual percent change

2015 are provided in Table 5 and shown in Figures 7-12. A long-term trend (AAPC) of the urinary system cancer incidence in men increased by 1.33% (95% CI –0.51, 3.20) and in women by 3.11% (95% CI 0.83, 5.45), but this increase was not statistically significant. AAPC of male kidney cancer was found to be 4.70% (95% CI 2.78, 6.66) and significant, whereas the long-term trend of bladder cancer in men, on average, was 0.29% (95% CI –1.27, 1.89) but not significant.

The incidence rate of the urinary system organ cancers for both sexes had different trends. Except for the kidney cancer,

examined urinary system cancers had one joinpoint for men (in 2007); it was found to be the best fit model. The incidence of bladder cancer in men presented a nonsignificant increase by 4.4% (95% CI –1.83, 11.03) per year from 2004 to 2007 and a decrease by –1.20% (95% CI –2.41, 0.02) per year between 2007 and 2015. For men, kidney cancer incidence rate significantly increased by 4.70% (95% CI 2.78, 6.66) per year during the evaluated period and it had no joinpoints.

For women, the incidence of cancers of the urinary system organs, kidney, and bladder had one joinpoint model that

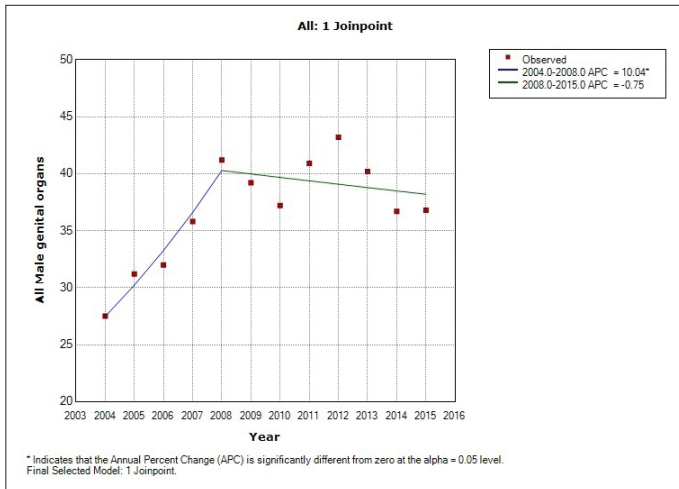


Figure 4. Trend in age-standardized all-type genital organ cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

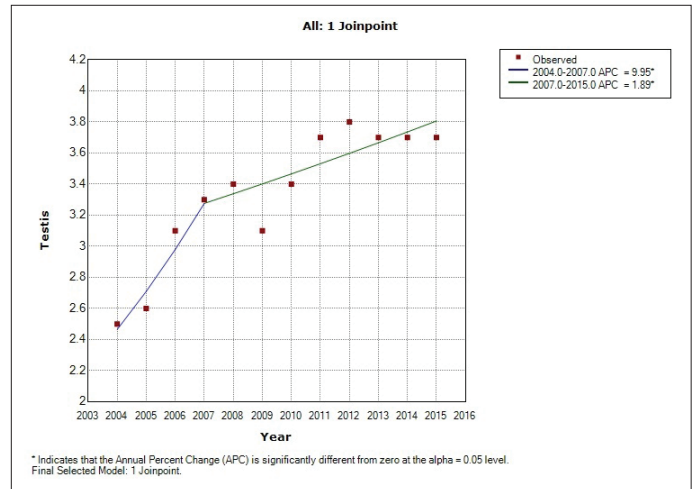


Figure 6. Trend in age-standardized testis cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

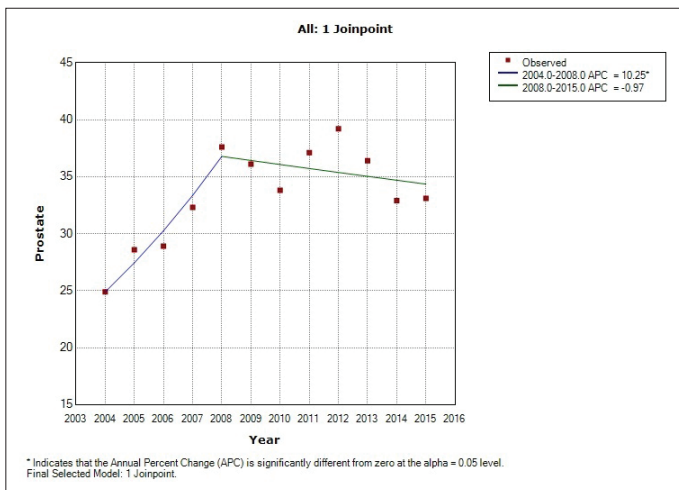


Figure 5. Trend in age-standardized prostate cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

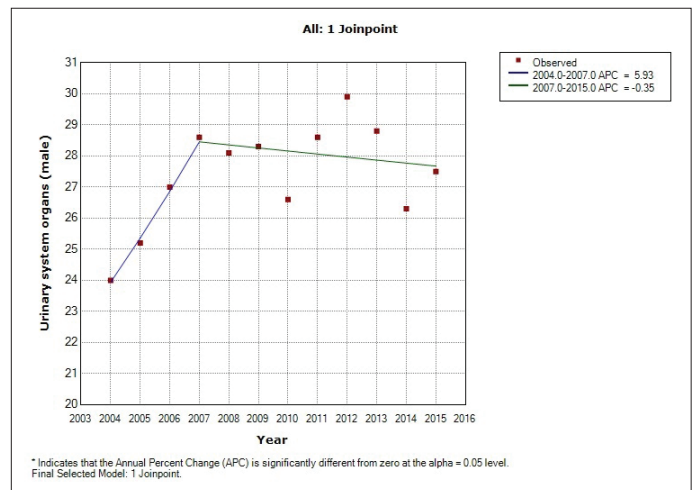


Figure 7. Trend in age-standardized urinary system organ cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

was found to be the best fit model. Overall cancer incidence significantly increased by 3.11% (95% CI 0.83, 5.45) in the urinary system organs and by 1.91% (95% CI 0.89, 2.94) in the bladder, but increased nonsignificantly by 2.12% (95% CI -0.31, 4.6) in the kidney in the entire observed period. In a short-term trend, the urinary system organ cancer incidence presented a significant increase by 8.15% (95% CI 1.87, 14.82) per year between 2004 and 2008 but nonsignificantly increased by 0.34% (95% CI -2.16, 2.91) between 2008 and 2015. Bladder cancer incidence had a significant increase by 5.56% (95% CI 2.64, 8.56) per year from 2004 to 2008 and presented a nonsignificant decrease by 0.12% (95% CI -1.15, 0.93) from 2008 to 2015.

Kidney cancer incidence significantly increased by 4.74% (95% CI 3.12, 6.39) per year between 2004 and 2012 but showed a nonsignificant decrease by 4.57% (95% CI -13.46, 5.24) per year from 2012 to 2015.

Discussion

In Turkey, the cancer registration was first initiated with the establishment of the Department of Fight Against Cancer in 1983. Together with this, membership of IARC in 1989 and the establishment of Cancer Registration Centers at Izmir and Diyarbakir in 1992 within the scope of the Cancer Registration and Incidence Project also became important milestones in the history of cancer

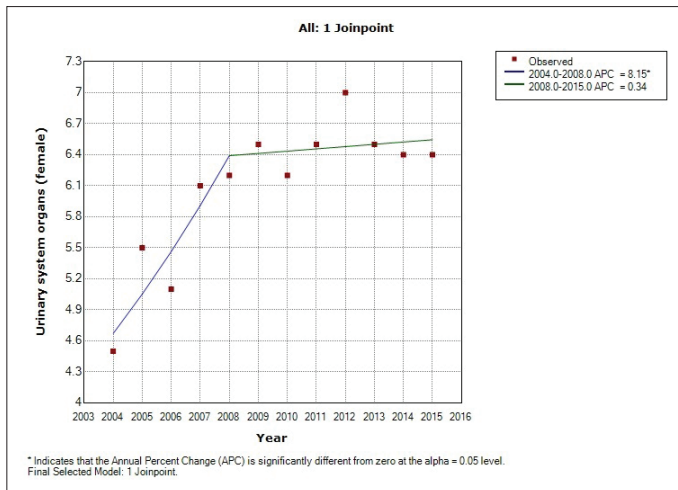


Figure 8. Trend in age-standardized urinary system organ cancer incidence rates in women in Turkey during 2004–2015: a joinpoint regression analysis

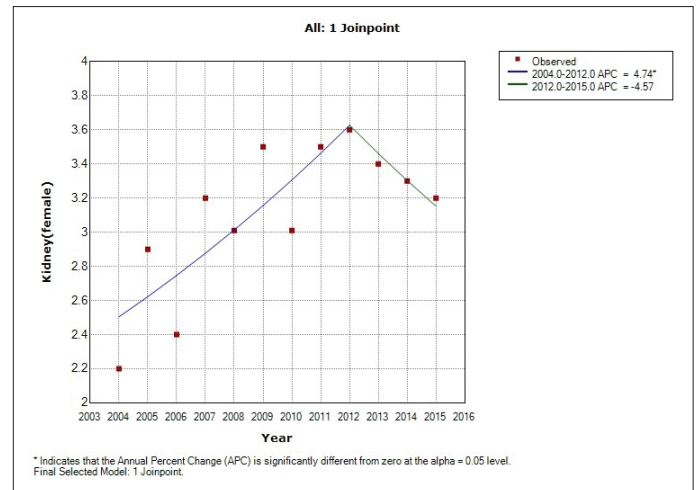


Figure 10. Trend in age-standardized kidney cancer incidence rates in women in Turkey during 2004–2015: a joinpoint regression analysis

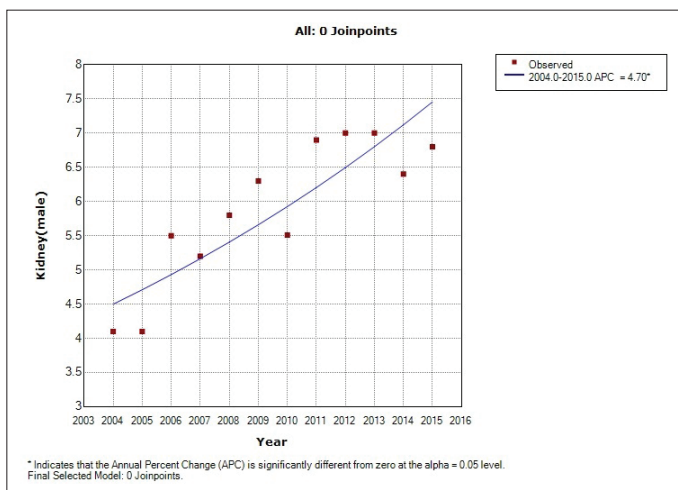


Figure 9. Trend in age-standardized kidney cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

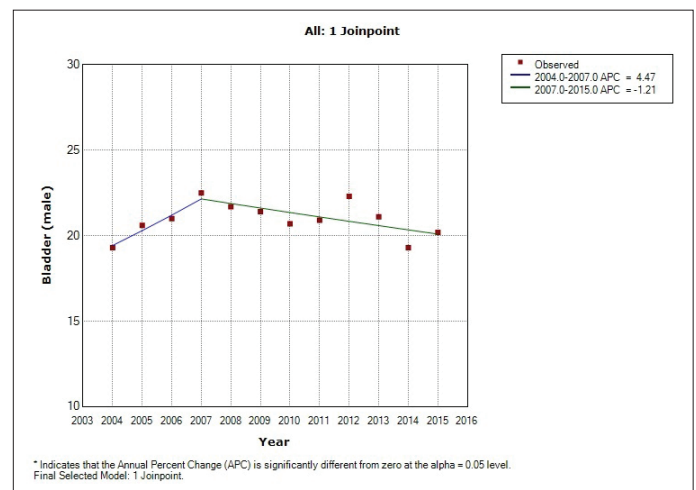


Figure 11. Trend in age-standardized bladder cancer incidence rates in men in Turkey during 2004–2015: a joinpoint regression analysis

registration in Turkey. With the increasing momentum in the 2000s, 10 Cancer Registry Centers were established during 2010 to increase professional cancer registration activities and to collect data for the representation of, at least, 20% of the country's population. As of 2013, cancer registry activities spread to 81 provinces.^[15] The number of Cancer Early Diagnosis Screening and Education Centers (KETEM), established for cancer screenings, was 84 in 2002 and increased to 175 by 2018.^[16] All these activities show improvements in countrywide cancer actions.

Recent data indicate that, in terms of the total incidence of cancer, Turkey ranked 53rd worldwide (225.1/100,000). It

ranked 41st in men and 75th in women (284.2/100,000 and 182.3/100,000, respectively). The three most common types of cancer are breast (46/100,000), prostate (42/100,000), and trachea-bronchial-lung cancers (37/100,000).^[17]

According to the results of our study, cancer incidence in Turkey increased by 1.22% in AAPC (the long-term trend) from 2004 to 2015. Especially, the APC (the short-term trend) increase of 4.75% between 2004 and 2008 appears statistically significant. While the long-term trend of incidence (AAPC) and short-term trend (APC) characteristics are not similar for man all type cancers. (AAPC: 0.76% and an increase of 6.24%

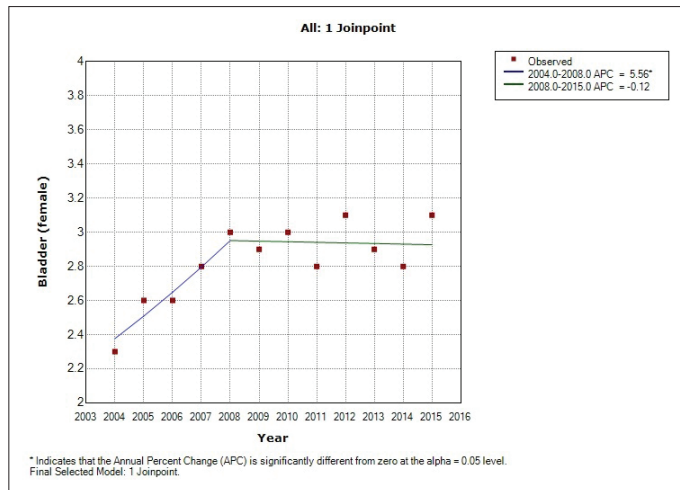


Figure 12. Trend in age-standardized bladder cancer incidence rates in women in Turkey during 2004–2015: a joinpoint regression analysis

between 2004 and 2007), trend years in women were identified as 2004-2012 and 2012-2015, and AAPC is above the incidence of all cancers (1.61%).

Within the 12-year period, While the total cancer incidence change percentage of our country (2004-2015) is 12.49%, this rate is 8.86% for the whole world (2008-2018).^[11] The available data for Turkey are limited. The data for the whole world contain information between 2002 and 2018, while the data for Turkey only include the period between 2004 and 2015, indicating that there is a more rapid increase in the cancer incidence in Turkey than in the world. Besides the epidemics of the diseases, the emergence of overdiagnosis related to the increase in screening and early diagnosis opportunities or the registry activities together with the spread of notification can be seen as other reasons that may lead to an escalation in incidence.^[18,19] With this increase within Turkey, it is debatable whether cases are actually increasing or more cases have been reported with the increasing developments in registration activities. In this study, the increase among urogenital cancer types throughout the first trend period, which approximately ended by 2007-2008, can be interpreted as an indicator of the prevalence and stabilization of cancer registration activities.

Among the urogenital system cancers examined in our study, only the AAPC of the incidence rate of bladder cancer in men was below the rate for the AAPC of 11-year incidence increase of all cancers (0.29%). The AAPC of remaining cancers (prostate, testis, and kidney) increased more than the whole cancer incidence. Since data from all cancer types are collected in the same way under cancer registration activities, bias related to data collection applies to all cancers. Therefore, it is plausible to claim

that the increases in urogenital cancers are higher than those for all cancers; this distinction is clear from the global data on all cancer cases. Male genital cancers in Turkey have increased two to three times compared to the world data (for Turkey: prostate cancer: 32.93%, testicular cancer: 48.0%; for the world: prostate cancer: 15.81%, testicular cancer: 13.33%). Even though bladder cancer has decreased in both sexes worldwide, the incidence has increased for both sexes in our country.^[11]

By the nature of the joinpoint regression analysis, although a unique trend period was analyzed for each cancer, trends usually tend to be similar in terms of cancer types and sexes. While the AAPC of male genital cancers' incidence is 3.04% in 11 years, trend breakdown was also statistically significant with an increase of 10.04% for APC in 2004-2008. As subgroups of genital cancers, prostate and testicular cancers tend to indicate an increasing trend as well (10.25% increase between 2004 and 2008 and 9.95% between 2004 and 2007 respectively).

While there was no cancer with decreased incidence during the entire study period, the APC decreased by 0.74% in 2008-2014. It is noteworthy that similar decreases in some types of urogenital cancer tended to occur during similar trend periods. All cancer incidence decreased in both sexes during the second trend period (2008-2015 in men, 2012-2015 in women); there were also decreases in urogenital cancers (genital, prostate, and bladder in men; kidney and bladder in women) in the second trend period.

When we evaluate the differences between sexes, we see that the total incidence of urinary cancers (bladder and kidney cancers) tends to increase more in women than in men. When we look at the subgroups of these cancers, the increase is significant in male kidney cancer incidence; significant increase is also seen in bladder cancer in women.

The incidence rate of prostate cancer change was high compared to global data (32.93, 15.81) as well as the incidence rate of testis cancer changes (48.0, 13.33). Prostate cancer is diagnosed in more than 1 million men every year. Furthermore, it leads to the death of approximately 300,000 people every year. If this increase continues, cases are expected to be around 1.7 million annually and deaths to be 499,000.^[10] Although prostate cancer (42/100,000) is the second most common cancer in Turkey, it is below WHO-Europe (59/100,000) and EU (71/100,000) averages, but it is above the world average (29/100,000). It rapidly tends to increase especially in developing or newly developed countries since these communities tend to deal with the problem of aging both because of the decreases in fertility and the increases in life expectancy at birth. The other causes of prostate cancer include age, genetic factors, ethnicity, family history, nutritional factors, and exposure to certain chemicals.^[20,21] The

measurement of prostate-specific antigen (PSA) in the blood and digital rectal examination are used worldwide for prostate cancer screening, but their effects on survival and mortality are controversial.^[22,23] When methods with higher sensitivity and specificity are discovered, the inclusion of prostate cancer will be discussed more in the following years due to the increasing cancer incidence in Turkey.

We should state that since the most recent report published by the Ministry of Health during the period of this study (November-December 2019) dates back to 2015 and that the report containing the data for 2016 has not been published yet, the achievements made till date in this field tend to be overshadowed. However, studies have showed inconsistencies in some cancer data including urological cancers in the comparisons made with the data of previous years.^[5] According to the tables related to the cancer data on the Health Statistics Yearbook 2017, it is stated that “previous data from 2009 should be carefully approached in terms of scope and quality,” which also proves this point and makes interpreting these trends in Turkey difficult.^[17] As we mentioned above, we can say that the reliability of the records has increased gradually in recent years with the increasing activities in the cancer registry. The use of these data in IARC reports is another proof.

While the incidences of all cancers have been increasing, the fact that urologic cancers have also been increasing more than all cancers indicates that the importance of both all cancers and urologic cancers will continue to increase regarding clinical applications, health services, and public health.

Since this is the first study to show and interpret the trends seen in urogenital cancer statistics in Turkey through the joinpoint regression method, we think that this study will be the fundamental contribution to new studies that will investigate the causes of trends.

Ethics Committee Approval: This type of study does not require ethical approval because the research was done from previously publicly available data.

Informed Consent: N/A.

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