




## Trends of genitourinary cancer among Saudis

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**ONCOLOGY/RECONSTRUCTION**

**ORIGINAL ARTICLE**

**Trends of genitourinary cancer among Saudis**

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**KEYWORDS**

Genitourinary cancer;  
Trends;  
Prostate;  
Bladder;  
Saudi Arabia

**ABBREVIATIONS**

ASR, age-standardized rate;  
GUC, genitourinary cancer;  
SCR, Saudi Cancer Registry;  
SEER, Surveillance, Epidemiology and End Results

**Abstract** *Introduction:* Saudi Arabia has a low incidence of cancer; the age-standardized rate of cancer is only 83/100,000, compared to the world rate of 181/100,000. Recent reports confirm a yearly increase in cancer in general, and of genitourinary cancer (GUC) in particular. The aim of the study was to assess the trends of GUC among Saudi nationals.

*Methods:* All available annual reports of the Saudi Cancer Registry (SCR) from 1994 to 2006 were analysed and compared with worldwide data.

*Results:* Over a period of 13 years, 7132 GUCs were identified among Saudis, comprising 8.9% of all cancers reported, compared to 12.7% worldwide. The incidence rate of GUC increased over the study period, with the greatest increase in prostate and kidney cancers, at 48% and 33%, respectively. Summary stage data (Surveillance, Epidemiology and End Results programme) showed late presentation of GUC at the time of diagnosis. An improvement in stage was only found in testicular and prostate cancer, at 79% and 50%, respectively. While prostate and bladder cancer ranked sixth and ninth in the male population, penile cancer continued to be a rare disease.

*Conclusions:* The incidence of GUC in Saudi Arabia is still low, but there was a significant increase in prostate and kidney cancer. More effort is needed to detect GUC at an earlier stage. A national cancer control programme is suggested.

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**Introduction**

Saudi Arabia has a low incidence of cancer; the age-standardized rate (ASR) is only 83/100,000 compared to the world rate of 181/100,000 [1,2]. The reasons for this low incidence are multifactorial. One of the crucial factors is the young age of the

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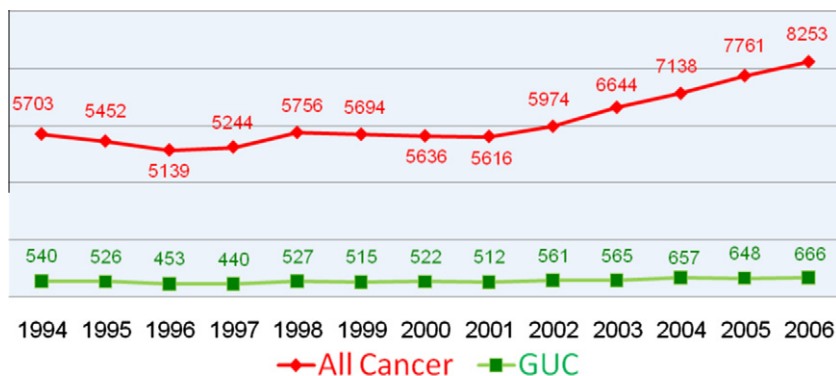
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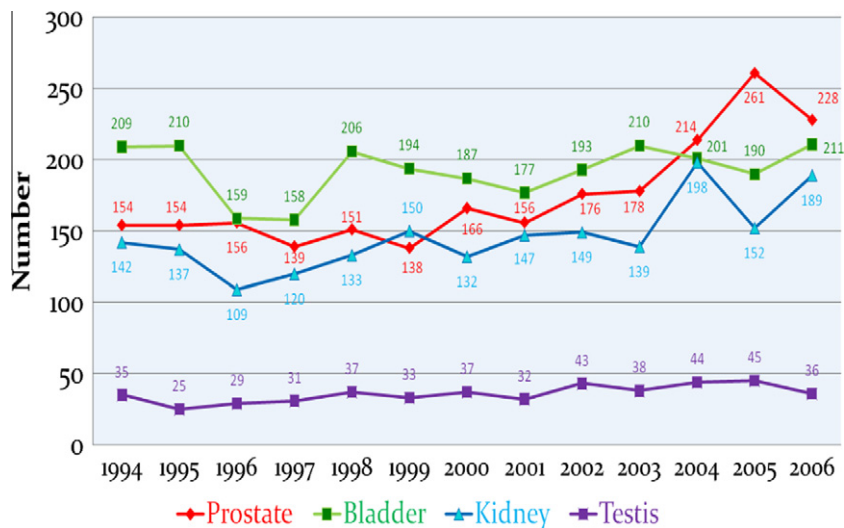
**Table 1** Comparative data for cancer among Saudis vs. worldwide.

Rank	Worldwide (Globocan 2008)		Saudis (SCR 2006)	
	Both sexes	Male	Both sexes	Male
1	Lung	Lung	Breast	Colorectal
2	Breast	Prostate	Colo-rectal	NHL
3	Colorectal	Colorectal	NHL	Leukaemia
4	Stomach	Stomach	Thyroid	Liver
5	Prostate	Leukaemia	Liver	Lung
6	Liver	Oesophagus	Liver	Prostate
7	Cervix	Bladder	Skin	Skin
8	Oesophagus	NHL	Lung	Hodgkin disease
9	Bladder	Leukaemia	Hodgkin disease	Bladder
10	NHL	Oral cavity	Stomach	Stomach

NHL, non-Hodgkin lymphoma.



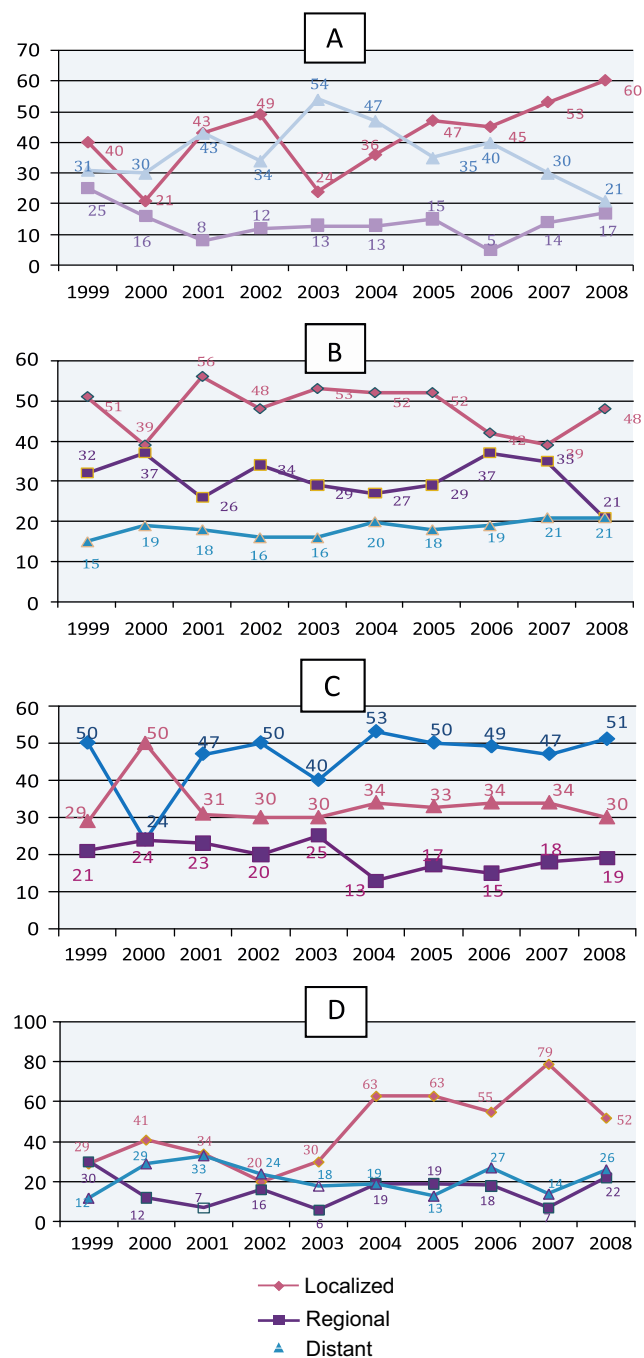
**Figure 1** Trends for all cancers and GUCs in Saudis during the study period.



**Figure 2** Trends for GUCs in Saudis, 1994–2006.

population, where 40% are aged < 15 years and are affected by 7% of all cancers. Those aged > 60 years are only 5% of the population and harbour 43% of all cancers [1,3]. None of the genitourinary cancers (GUCs) is among the 10 most common cancers for both sexes, reflecting its low incidence of 8% of all cancer cases. The ASR of GUC is only 11.6/100,000, compared to world rate of 38.8/100,000 [1,2]. The ASR of prostate, bladder, kidney and testicular cancers

among Saudis were 6.1, 2.6, 2.4 and 0.5/100,000, respectively. Previous reports confirm the yearly increase of cancer in general and of GUC in particular [4–8]. Cancer occurrence reports used to be derived from hospital-based data [5,9,10]. Ever since the establishment of the Saudi Cancer Registry (SCR) in 1992 and its first report in 1994, more accurate data have been derived on cancer epidemiology in this country. The SCR is a population-based registry.



**Figure 3** Cancer SEER summary stage (KFHS&RC). (A) prostate; (B) bladder, (C) kidney; (D) testicular.

Cancer is categorized as a mandatory notifiable disease, so that all cancer cases diagnosed over the country are reported. This ensures a comprehensive data collection [11]. The aim of the study was to assess the trends of GUC among Saudi nationals using SCR reports.

## Methods

All annual SCR reports from 1994 to the latest in 2006 were carefully analysed and compared with worldwide data.

## Results

Between 1994 and 2006, > 80,000 cancer cases were reported by the SCR. GUC comprised 7132 cases, representing only 8.9% of all cancers reported. In bladder and kidney cancer the male to female ratio was 2.3:1 and the average age of patients for males was 64 years and for females 69 years. For prostate and testicular cancer the average age at presentation was 71 years and 32 years, respectively. The most common GUC was bladder cancer (3.1%), followed by prostate (2.8%), kidney (2.3%) and testicular cancer (0.6%). Penile cancer remains an extremely rare disease (0.03%). In the male population prostate and bladder cancer ranked sixth and ninth, respectively (Table 1). There was an annual increase of cancer over the study period and GUCs followed the same pattern (Fig. 1). The greatest increase in GUC was for prostate and kidney cancer (Fig. 2). The Surveillance, Epidemiology and End Results (SEER) summary stage data showed a late presentation of GUC at the time of diagnosis. There was an improvement in stage only for testicular and prostate cancer, at 79% and 50%, respectively (Fig. 3).

## Discussion

The low incidence of cancer among Saudis is reflected by a low ASR of 83/100,000, compared to the world rate of 181/100,000. This pattern of incidence is also apparent in the ASR of GUC, which is only 11.6, compared to the worldwide rate of 38.8/100,000. The young age of the Saudi population is one of the crucial factors for this low prevalence, as those aged > 60 years comprise only 5% [3]. Previous reports confirmed a yearly increase of cancer in general and of GUC in particular, and there was a trend during the study period [4,5,8]. Over a period of 13 years (1994–2006), 7132 GUCs were identified among Saudis by the SCR, comprising 8.9% of all cancers reported, compared to 12.7% worldwide [12]. For that reason, none of the GUCs was among the 10 most common cancers, but in the male population prostate and bladder cancer ranked sixth and ninth, respectively. Up to 2003, bladder cancer used to be the most common GUC in Saudis, nevertheless prostate cancer increased over the study period by 48% with no change in the incidence of bladder cancer. Kidney cancer also increased by 33%, while testicular cancer remained unchanged (Fig. 2). The reasons for the increases in prostate and kidney cancer could be explained by the greater use of PSA testing and routine ultrasonography [13]. Currently there is no Saudi national programme for the early detection of any cancer except breast cancer. PSA testing is used routinely in urology patients attending urology clinics, and who are aged > 50 years. Ultrasonography is usually requested as part of general investigations for various medical conditions. The only notable change seen in bladder cancer over the study period was the dramatic reduction in squamous cell carcinoma, from 10.6% in 1994 to 5.4% in 2006, which correlates well with the elimination of schistosomiasis nationwide. In 2007 the prevalence rate of schistosomiasis had decreased to 1.52/100,000 as a result of active environmental and patient treatment measures [14]. The problem for all cancer cases among Saudis is the failure to detect early disease. From the SEER summary stage data of the GUCs, there was a pattern of late presentation

for all GUCs at the time of diagnosis [15]. There was an improvement in stage only for testicular and prostate cancer, of 79% and 50%, respectively (Fig. 3). Penile cancer continued, as expected, to be extremely rare, in view of the tradition of male circumcision. There is nevertheless a rare occurrence of scarred penile-shaft cancer after extensive pubic circumcision [16]. The establishment of a national cancer control programme, as advocated by the WHO, might be the best way to prevent and detect cancer early in this fast-developing country [17]. Such a national programme will introduce improvements of quality of life to all cancer patients in the country, through the implementation of strategies for cancer prevention, early detection, diagnosis, treatment and palliation, making the best use of the country's available resources.

In conclusion, the incidence of GUCs in Saudi Arabia is still low, but there has been a recent significant increase in prostate and kidney cancer. Of paramount importance is the late presentation of GUCs at the time of diagnosis, which requires more effort to detect GUCs at an earlier stage. A national cancer care programme is suggested.

#### Conflict of interest

No conflict of interest to declare.

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