A real-world data study regarding hospital resources use and costs associated with prostate cancer in Spain

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BACKGROUND

- Prostate cancer is the most commonly diagnosed tumor in men in Spain, with more than 31,000 estimated new cases in 2018, and also the most prevalent (~29,000 cases; 1-year prevalence) (1-2).

- In recent years, there has been an increase in the number of prostate cancer cases and it has been estimated that the incidence could continue growing, raising up to ~46,000 cases in year 2040 (1). The 5-year relative survival rate is almost 100% (3), being the 3rd cancer that causes more mortality in men (1-2).

- Tumors has become one of the most important socioeconomic problems in Spain, and prostate cancer represents a relevant issue to the national health system (4).

OBJECTIVES

- The aim of the study is to describe hospital resource use and costs associated to prostate cancer patients who attended hospital during 2016 through a healthcare claim database (5).

METHODS

Study design and patients

- Madrid is the 3rd most populated region in Spain with almost 6.5 million inhabitants (6), 52% female. Retrospective data from the Minimum Basic Data Set (MBDS) of the Ambulatory and Patient's Hospitalization database 2016 of Madrid (5) were extracted.

- Patients were included if they had at least one diagnosis, main or secondary for prostate cancer (coded C61 using ICD-10). Every single hospital contact, outpatient or inpatient, independently of the reason for visit, was collected in order to estimate the clinical and economic burden of disease.

Data extraction

- 1) Socio-demographic information (age, sex); 2) Number of hospital contacts (hospitalization and outpatient care); 3) Length of stay (days); 4) Main diagnoses; 5) Procedures performed during hospitalization and outpatient care; 6) Costs.

Statistical analysis

- A descriptive statistical analysis was developed, including the following measures: mean, standard deviation (SD), rate per 100,000 inhabitants and percentage.

RESULTS

- A total of 2,243 patients with prostate cancer were identified: 99.8% were men and mean age (SD) at first hospital episode was 72.0 (10.0). All patients caused a total of 1,180 and 5,898 hospitalization and outpatient episodes (table 1).

- A total of 90 (4.0%) patients died during a hospital episode. In that subpopulation, the mean age at first episode was 80 years and the total number of episodes was 327 (table 1).

Table 1. Demographic characteristics of patients included in the analysis.

Characteristics	Inpatient care (N=767)	Outpatient care (N=1,773)	Total (N=2,243)	Deaths (N=90)
Age, mean years (SD)	75.2 (10.8)	70.7 (9.2)	72.0 (10.0)	80.2 (11.1)
Sex – Men, n (%)	766 (99.8)	1,768 (99.7)	2,238 (99.8)	90 (100)
Number of episodes, n	1,180	5,898	7,078	327
Rate per 100,000 inhabitants*	31.0	71.6	90.6	3.6

*According to inhabitants in Comunidad de Madrid men population in 2016 (6)
SD: standard deviation

- Most frequent main diagnoses related to hospitalization and outpatient episodes are shown in figure 1; and most frequent procedures performed during the episodes are detailed in figure 2.

- The mean of hospitalization episodes and outpatient visits per patient was 0.5 and 2.6, respectively. Patients who died during the study periodhad a mean of 1.9 and 1.7 hospitalization and outpatient episodes (figure 3).

- Length of hospitalization for the overall sample was estimated in 9,482 days, with a mean of 4.2 days per patient. For the subpopulation of patients who died during the study period, the mean was 21,9 days per patient.

- The overall healthcare costs including inpatient and outpatient care were estimated in €10,030,106, of which €6,158,459 corresponded to inpatient care and €3,871,647 to outpatient care. Cost per patient associated to the overall patient population included and to patients who died during the study period are shown in figure 3.

Figure 1. Most frequent main diagnoses in inpatient (A) and outpatient (B) care.
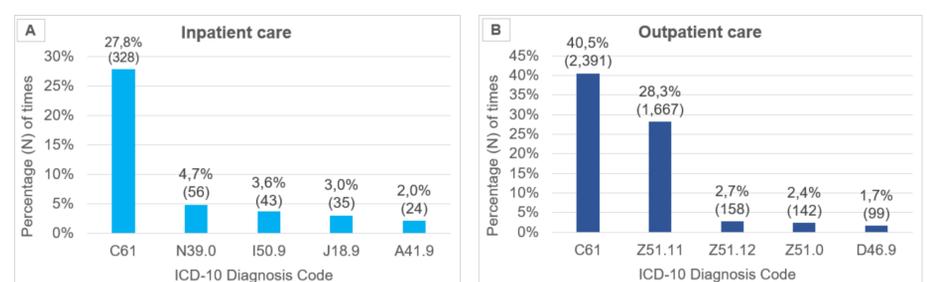
A41.9: Sepsis, unspecified organism; C61: Malignant neoplasm of prostate; D46.9: Myelodysplastic syndrome, unspecified; I50.9: Heart failure, unspecified; J18.9: Pneumonia, unspecified organism; N39.0: Urinary tract infection, site not specified; Z51.0: Encounter for antineoplastic radiation therapy; Z51.11: Encounter for antineoplastic chemotherapy; Z51.12: Encounter for antineoplastic immunotherapy.

Figure 2. Most frequent procedures during inpatient (A) and outpatient (B) care.
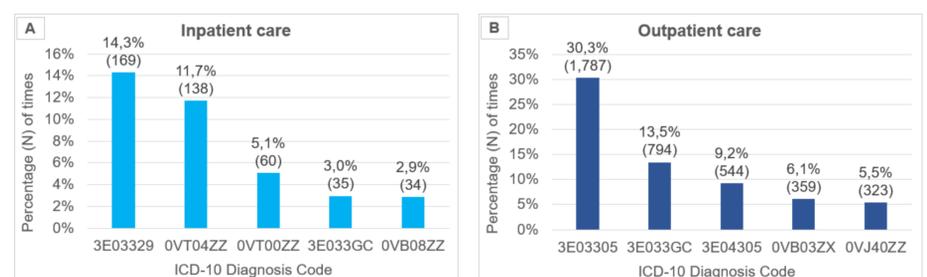
0VB03ZX: Excision of Prostate, Percutaneous Approach, Diagnostic; 0VB08ZZ: Excision of Prostate, Via Natural or Artificial Opening Endoscopic; 0VJ40ZZ: Inspection of Prostate and Seminal Vesicles, Open Approach; 0VT00ZZ: Resection of Prostate, Open Approach; 0VT04ZZ: Resection of Prostate, Percutaneous Endoscopic Approach; 3E03305: Introduction of Other Antineoplastic into Peripheral Vein, Percutaneous Approach; 3E03329: Introduction of Other Anti-infective into Peripheral Vein, Percutaneous Approach; 3E033GC: Introduction of Other Therapeutic Substance into Peripheral Vein, Percutaneous Approach; 3E04305: Introduction of Other Antineoplastic into Central Vein, Percutaneous Approach.

Figure 3. Number of episodes and cost per patient by type of care and patient population.

*Patients who died during the study period.

CONCLUSIONS

- Prostate cancer patients attend inpatient or outpatient care approximately 3 times per year, causing a total associated cost of more than €10 million. Patients who died during the study period had an increased use of inpatient care, spending more days in hospital, and leading to an increase of nearly three times the overall cost per patient of prostate cancer population.

- **Real-world data studies provide useful information regarding hospital resource use for a range of diseases where patients have a regular contact with hospital.**

- **Prostate cancer caused an important use of health resources, corresponding to 0.13% of the overall health budget for 2016 in the region of Madrid (7).**

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