Public Policies and Type of Insurance Are Associated With the Burden of Bladder Cancer – Related Inpatient Health Care in Chile: A Two-Decade Analysis

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Abstract

Objective To quantify changes in the burden of bladder cancer (BC) inpatient health care in Chile between 2001 and 2019, focusing on the impact of public policies and the type of medical insurance (public or private) held by patients.

Methods We retrospectively collected national data on hospital discharges and calculated raw and adjusted hospitalization rates for the period of 2001 to 2019 categorized by sex and age. Additionally, we analyzed length of hospital stays, outcomes of surgical interventions, and discharge conditions based on the type of medical insurance — public: FONASA; private: ISAPRE. We also evaluated the impact of public policies such as the GES (“garantías explícitas en salud”) program, which ensures opportunities and access to medical attention, financial protection, and quality of care for a subset of diseases.

Results A total of 34 100 hospital discharges were analyzed. Most patients were men (71%), and median age was 69 years. Of the patients, 91.3% had some kind of medical insurance, either private or public. Within this subset, 71.3% had public medical insurance (FONASA) and 23.2% had private medical insurance (ISAPRE). Patients on FONASA had significantly higher levels of overall surgery-related mortality (0.83% vs. 0.2%) and significantly longer median hospital stays (4 days vs. 2 days) compared to patients on ISAPRE. Following the implementation of the GES program in 2013, we observed an increase in transurethral resections and a reduction in radical cystectomies among publicly insured patients.

Conclusions The type of medical insurance has a significant impact on the burden of BC-related inpatient health care in Chile, reflecting a significant disparity in terms of health care. The implementation of public policies such as the GES program can play a key role in reducing this gap between public and private medical insurance systems, especially in underdeveloped countries.

Introduction

Bladder cancer (BC) is the seventh most common malignancy worldwide, with a global incidence of 7.4/100 000[1]. Incidence rates of BC are higher in high-income countries, particularly among men and associated with age. The main risk factor for BC is tobacco use, accounting for 50% to 60% of cases[2]. Previous studies have demonstrated that socioeconomic status, ethnicity, and health coverage are independent prognostic factors of clinical outcomes for the common malignancies, including BC (CIE-10 – c67)[3,4]. Among these factors, health coverage is particularly...
In Chile, the health care system uses a mixed model that consists of a public medical insurance fund (FONASA: "Fondo Nacional de Salud") and private medical insurance providers (collectively called ISAPRES: "Instituciones de Salud Previsional"). According to official figures from 2018, FONASA covers 78% of the Chilean population whereas ISAPRES provides coverage for 18%. Both insurance systems are regulated by the Chilean Ministry of Health (MINSAL). The remaining 4% is covered by the armed forces and other specific insurance providers. To date, private and public medical insurance systems operate independently, without formal coordination.[10] In 2005, Chile implemented the Explicit Guarantees in Health ("garantías explícitas en salud"); GES) system. This autonomous branch of the health care system ensures timely access to quality health care for a prioritized set of diseases. Since GES was introduced, it is required that BC patients be treated within 100 working days for staging and up to 45 days for treatment. The evolution of overall bladder cancer-specific survival in BC patients without medical insurance or with public medical insurance[7].

The objective of our study was to quantify changes in the total number of annual BC discharges by the estimated total population. These calculations were based on data obtained from national surveys and administrative bulletins. The primary outcome of this study was to analyze the changes in discharge rates by insurance type over time, along with changes in discharge rates by insurance type in the period from 2001 to 2019 (Figure 2). Additionally, our study observed a steady increase in inpatient mortality rate from 17.3% in the period from 2001 to 2003 to 23.9% in the period from 2017 to 2019. Table 1 and Figure 2 summarize the number of annual discharges and the changes in discharge rates by insurance type over time.
inpatient mortality for patients undergoing BC-related surgical interventions was 0.6% compared to 6.5% for those not undergoing surgery (P < 0.001). After adjusting for insurance type, the overall postoperative mortality rate for BC patients was 0.8% for FONASA (public) patients and 0.2% ISAPRE (private) patients (P < 0.001).

Among patients undergoing surgery, we observed a significant increase in transurethral resection of bladder tumors (TURBTs) and radical cystectomies over time in newly diagnosed cases, particularly following the introduction of the GES program. The total number of these procedures reached up to 2289 in the period from 2017 to 2019. This trend persisted after adjusting for type of insurance (Figure 3).

Median values for hospital stay also differed according to insurance, with a median of 4 days for FONASA patients and 2 days for ISAPRE patients. Table 2 compares length of hospital stays by type of surgery, showing significantly longer stays for patients with public insurance across almost all types of surgery. Finally, Figure 4 shows a sustained increase in annual hospital bed-days over time, starting in 2010, particularly for FONASA patients.

Discussion
To our knowledge, this study provides the first descriptive analysis of the burden of BC-related hospital discharges in Chile, while examining the impact of medical insurance and public policies such as the GES program. Furthermore, we found a significant association between the type of medical insurance and BC clinical outcomes. Most Chileans are enrolled in FONASA (public medical insurance), and only a fraction uses private health coverage (ISAPRE). However, the number of ISAPRE users has progressively increased in recent years. Our study found that the incorporation of BC into the GES program in 2013 was associated with an increase in the number of hospital discharges and bed-days. We also found a doubling in the number of TURBTs over the 2001–2019 period. While our findings indicate higher mortality rates among FONASA patients, these rates decreased over time, particularly after the incorporation of BC into the GES program, suggesting a positive effect of this public policy.

Patients undergoing BC-related surgery exhibited lower inpatient mortality compared with those without surgery, regardless of their medical insurance. However, our results also highlight the contrasting realities of the public and the private health care systems in Chile. A previous study by Castillo-Laborde et al. showed that FONASA mainly serves the elderly and lower-to-mid-income individuals. The public medical insurance provides coverage for a large proportion of the Chilean population, including a high proportion of women and individuals with a higher prevalence of risk factors [10], which may explain the higher inpatient mortality rates among FONASA patients observed in our study, regardless of surgery.

Notably, we observed a trend toward lower mortality rates following the incorporation of BC into the GES program in 2013, particularly among FONASA patients. This was accompanied by an increase in the number of TURBTs and a reduction in the proportion of radical cystectomies within the same subset of FONASA patients. These results are aligned with international reports. In 2010, the US Congress approved the expansion of the Medicaid program under the Affordable Care Act (ACA), which delivered health care coverage to
low-income individuals. Consequently, cancer patients diagnosed after the expansion exhibited 15% less probability of having metastatic disease compared with patients diagnosed before the expansion, suggesting a delay in the diagnosis of advanced-stage BC mainly because of the aggressive therapies patients undergo. Moreover, non-muscle-invasive tumors usually evolve even higher costs due to extended treatments and follow-up schedules[19]. Our study revealed longer hospital stays for FONASA patients who underwent TURBT compared to ISAPRE patients (4 vs. 2 bed-days). Additionally, hospital discharge rates increased over time in both FONASA and ISAPRE patients, imposing a major economic burden on the public system, which accounted for 76.1% of the total discharges during the 2017–2019 period.

It is important to acknowledge the imitations of our study, including potential registration bias leading to missing data for certain variables in our database, such as performance status, other comorbidities, tumor stage, and postoperative care. Approximately 14% of patients did not have registered medical insurance between 2001 and 2019. Additionally, some registries lacked associated IDs, preventing assessment of whether they represented new cases or readmissions of the same patient. Furthermore, we were unable to obtain clinical details for all patients, and some hospital stays may have been misdiagnosed as BC. Finally, our analyses were limited to Chilean patients, making it difficult to extrapolate these findings to other countries. However, these results may reflect the situation of low-income countries within health care. The implementation of public policies such as the GES program may help to reduce this gap between public and private health care systems.

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Author contributions

All authors contributed to the study conception, design, and analysis. Ignacio Elkit and Mario Fernández wrote the first draft of the manuscript and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

### References


