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Original Research Report

Unique Characteristics of High-Cost Users of Medical Care With Comorbid Mental Illness or Addiction in a Population-Based Cohort

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Objective: *To understand whether high-cost users of medical care with and without comorbid mental illness or addiction differ in terms of their sociodemographic and health characteristics. Unique characteristics would warrant different considerations for interventions and service design aimed at reducing unnecessary health care utilization and associated costs.* **Methods:** *From the top 10% of Ontarians ranked by total medical care costs during fiscal year 2011/2012 (N = 314,936), prior 2-year mental illness or addiction diagnoses were determined from administrative data. Sociodemographics, medical illness characteristics, medical costs, and utilization were compared between those high-cost users of medical care with and without comorbid mental illness or addiction. Odds of being a frequent user of inpatient (≥3 admissions) and emergency (≥5 visits) services were compared between groups, adjusting for age, sex, socioeconomic status and medical illness characteristics.* **Results:** *High-cost users of medical care with comorbid mental illness or addiction were younger, had a lower socioeconomic status, had greater historical medical morbidity, and had higher total medical care costs (mean excess of $2,031/user) than those without. They were more likely to be frequent users of inpatient (12.8% vs 10.2%; adjusted OR, 1.14; 95% CI: 1.12–1.17) and emergency (8.4% vs 4.8%; adjusted OR, 1.55; 95% CI: 1.50–1.59) services. Effect sizes were larger in major mood, psychotic, and substance use disorder subgroups.* **Conclusions:** *High-cost medical care users with mental illness or addiction have unique characteristics with respect to sociodemographics and service utilization patterns to consider in interventions and policies for this patient group.*
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Key words: high-cost users, comorbidity, health care utilization, frequent user, health administrative data.

INTRODUCTION

In any given year, a small proportion of individuals account for the majority of health care utilization and spending.[1–4] Leaders in the field recommend that a deeper understanding of the diverse population of high-cost users is needed to be able to develop, evaluate, and integrate interventions that can reduce costs and improve outcomes.[5] It is now known that

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there is a very high burden of mental illness and addiction among high cost-users.[3,6,7] We previously found that over 30% of the highest-costing users of medical (i.e., non-mental health) services had comorbid mental illness or addiction, a rate 3–5 times higher compared to the lowest-cost users.[8]

Some data suggest, however, that quality improvement strategies to reduce health care utilization and contain costs may not be as effective in mental health populations.[9] The benefits of clinic-based integrated care strategies and case management interventions appear to abate with increasing psychosocial complexity often present among individuals with serious mental health issues.[10,11] A better characterization of high-cost medical users with comorbid mental illness and/or addiction may guide development of interventions to reduce costs and improve health outcomes in this vulnerable group, and by extension for high-cost users as a whole.

This study's aim was to understand how high-cost users of medical services differ depending on whether or not they have a comorbid mental illness or addiction in terms of their demographic characteristics, medical illness profiles, comorbidity and disease chronicity, medical costs, and patterns of medical care utilization.

MATERIAL AND METHODS

Design and Data Sources

This population-based cohort study used Ontario health administrative data housed at the Institute for Clinical Evaluative Sciences (ICES) where data from various sources are de-identified and linked using an encrypted health care number. Data on demographics, mental illness and addiction service use, and medical service use were extracted from databases outlined in Appendix A. These data have been found to be accurate and reliable with respect to demographic and diagnostic coding.[12] This study was approved by the Research Ethics Board at Sunnybrook Health Sciences Centre (ICES logged study: 20140904318000).

Participants

In Ontario, Canada's most populous province, all eligible residents are issued a provincial health card that provides access to the government-funded provincial health insurance program that covers all physician and hospital-based care, as well as publicly funded home care services. Thus, for the most part, there are no financial barriers to accessing health care, although financial issues may factor into outpatient medications (if not covered by third parties or government programs) and some outpatient non-physician services that are unfunded or covered in limited capacity only (e.g., private home care, physiotherapy). In this study, for all Ontario residents aged 18 or older with a valid Ontario health card as of April 1, 2011 (the index date), we calculated medical (i.e., non-mental health-related) costs between April 1, 2011 and March 31, 2012 (the observation year) for the medical services that account for approximately 80% of healthcare spending among the highest-costing users in Ontario.[13] This included costs for (1) acute inpatient care (excluding obstetrical deliveries), (2) emergency department (ED) visits, (3) continuing care services (inpatient physical rehabilitation, complex continuing care hospitalizations, and home care), and (4) complex ambulatory care including same-day surgeries and hospital-based dialysis and oncology care. In Ontario, complex continuing care hospitalizations refer to non-acute inpatient medical care provided to patients who are not ready for discharge. Services are provided in a free standing facility or co-located in an acute care or physical rehabilitation program. These medical costs did not include prescription drugs or other outpatient care. Cost calculations were done using an available, rigorous costing approach from the perspective of the Ontario healthcare system.[14] For all services except home care, this approach bases cost calculations on cost per unit for a given service type multiplied by the amount of utilization, weighted for patient complexity using case mix methodology for hospital resources, and standardized to the fiscal year. Home care costs are calculated using hourly rates for non-physician care and physician billing claims. In order to distinguish a group of high-cost users, all individuals with medical care costs greater than zero were ranked and grouped into percentiles.[8] As in previous studies of high-cost users,[6,7] the study cohort comprised the top 10% of this sample ranked by cost.

Comorbid Mental Illness and Addiction

Comorbid mental illness and addiction diagnoses within 2 years prior to the observation year were identified using diagnosis data for all inpatient psychiatric admissions, psychiatric ED visits, and outpatient