



Original Contribution

Association of mental health disorders and Medicaid with ED admissions for ambulatory care–sensitive condition conditions ^{☆,☆☆,★}



Cara Bergamo, MD ^{a,*}, Elizabeth Juarez-Colunga, PhD ^b, Roberta Capp, MD, MHS ^c

^a Denver Health Emergency Medicine Program, Denver Health Medical Center, Denver, CO

^b Biostatistics and Informatics, Colorado School of Public Health, Aurora, CO

^c Department of Emergency Medicine, University of Colorado School of Medicine, Aurora, CO

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ABSTRACT

Introduction: Adult Medicaid enrollees are more likely to have mental health disorders (MHDs) than privately insured patients and also have high rates of emergency department (ED) visits for ambulatory care–sensitive conditions (ACSCs). We aimed to evaluate the association of MHD and insurance type with ED admissions for ACSC in the United States.

Methods: We conducted a cross-sectional study of ED visits made by adults aged 18 to 64 years using the corrected 2011 National Emergency Department Survey. Using multivariable logistic regression analysis, we controlled for sociodemographics and clinical variables to determine the association between insurance type, MHD, Medicaid, and MHD (as an interaction variable) and ED admissions for ACSC.

Results: There were 131 million ED visits in 2011; after exclusions, 1.4 million admissions were included in our study. Of all ED visits, 44.7% had an MHD, of which 49.9% were covered by Medicaid and 38.1% were covered by private insurance. A total of 32.6% (95% confidence interval, 32.5%–32.7%) of ED admissions were for an ACSC. Medicaid-covered ED visits were more likely to result in ACSC hospital admission (odds ratio, 1.32; 95% confidence interval, 1.30–1.35) compared with visits covered by private insurance. Among patients with MHD, those with Medicaid insurance had 1.6 times the odds of ACSC admission compared with those privately insured.

Conclusion: Among all ED admissions, patients covered by Medicaid are more likely to be admitted for an ACSC when compared with those covered by private insurance, with a larger association being present among patients with MHD comorbidities.

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1. Introduction

Millions of Americans suffer from co-occurring mental and physical chronic illness [1,2]. Adults with mental health disorders (MHDs) are less likely to care for their chronic medical conditions and have worse outcomes of co-occurring chronic diseases compared with patients without MHD [3]. They are also more likely to have frequent visits to the emergency department (ED) and to be admitted [4–7]. States throughout the United States are developing interventions aimed at reducing costs by preventing avoidable hospital admissions. Ambulatory care–sensitive condition (ACSC) hospital admissions are a nationally recognized quality measure used to identify avoidable hospital admissions [8].

Patients insured by Medicaid are more likely to have MHD and to present to the ED with chronic medical disease complaints [9–11]. Specifically, adult Medicaid enrollees have higher rates of ACSC ED visits compared with those privately insured and uninsured [12]. Survey studies suggest that patients with Medicaid use the ED more often when compared with those who have private insurance because of primary care access barriers [13]. However, those studies were limited in that they did not (1) evaluate hospital admissions from the ED for ACSC and (2) take into account whether or not Medicaid enrollees had an MHD diagnosis, and how this could potentially impact their care for co-occurring chronic diseases.

Previous studies conducted on the elderly population and veterans showed a strong link between MHD and hospital admissions for ACSC [14,15]. We hypothesize that a similar pattern exists for those with Medicaid insurance. Given the ED is the portal of entry for hospital admissions covered by Medicaid insurance, we used a nationally representative all payer ED data set to evaluate whether an interaction exists between MHD and Medicaid insurance coverage when evaluating patients admitted from the ED for an ACSC. Understanding the role of MHD and insurance type on ACSC admissions from the ED has important clinical and policy implications, especially given that Medicaid is now the largest payer source for low-income Americans.

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* Corresponding author at: Department of Emergency Medicine, Denver Health Medical Center, 777 Bannock St, Denver, CO 80204.

E-mail address: cara.bergamo@denverem.org (C. Bergamo).

2. Methods

We conducted a cross-sectional study of adults aged 18 to 64 years using the corrected 2011 National Emergency Department Survey (NEDS). The corrected version accounts for errors found in the prior NEDS 2011 database. We included individuals that were admitted to the hospital from the ED or those that were transferred, as patients that are transferred are usually admitted to the hospital. The NEDS is a part of the Healthcare Cost and Utilization Program, which is the largest US collection of data related to longitudinal hospital care [16]. The data set provides patient level data on a 20% stratified sample of ED visits, from 950 hospitals and 30 states, which are used to generate nationally representative estimates. For the year of 2011, it had approximately 131 million ED visits [17]. Hospitals are selected using a stratified probability sample based on geographic region, trauma designation, urban-rural location, teaching status, and hospital control in order to provide an accurate estimate of the total number of ED visits that occur in the United States. The NEDS is publically available through the Agency for Healthcare Research and Quality.

2.1. Primary outcome

Our primary outcome was hospital admissions from the ED for ACSC among patients with MHD and Medicaid when compared with patients with MHD or Medicaid alone.

2.2. Study patient population

We defined MHD by applying MHD Clinical Classification Software groupings (650–652, 656–659, 663, and 670) to NEDS diagnostic fields 2 to 15. These numbers correspond to the following MHDs: adjustment disorders, anxiety disorders, attention-deficit, conduct and disruptive behavior disorders, impulse control disorders, mood disorders, personality disorders, schizophrenia and other psychotic disorders, screening and history of mental health and substance abuse codes, and miscellaneous mental disorders (eating disorders, mental disorders in pregnancy, dissociative disorders, factitious disorders, sleep disorders, and somatoform disorders). We excluded substance abuse and MHDs of infancy, given that our goal was to focus on MHDs, including mood, personality, adjustment, anxiety, impulse, and behavioral disorders in the adult population.

Ambulatory care-sensitive conditions were defined using the Agency for Healthcare Research and Quality's definition [8]. The following conditions are included in the analysis: bacterial pneumonia, hypertension, dehydration, adult asthma, urinary tract infection, chronic obstructive pulmonary disease, perforated appendix, diabetes short-term complication, diabetes long-term complication, uncontrolled diabetes, lower extremity amputation among patients with diabetes, angina without procedure, and congestive heart failure. We excluded all conditions pertaining to the pediatric population, such as pediatric gastroenteritis, pediatric asthma, and low birth weight.

From the 131 million ED visits in the NEDS database, we excluded 110 million because they did not lead to a hospital admission. From this population, we excluded patients with a primary admission diagnosis of MHD because we wanted to evaluate the impact of MHD on admissions primarily for ACSC from the ED. We also excluded those who were admitted to the hospital from the ED primarily for an injury because these are more likely a result of trauma and not a chronic disease. Patients who were pregnant or who died in the ED were also excluded. Finally, we excluded those with Medicare insurance because these patients are more likely to be chronically ill and disabled, and not comparable with our remaining sample. After all exclusions, we had 1.5 million ED visits in our study, which was equivalent to 6.5 million once weighted. We categorized insurance status by Medicaid, private, self-pay, or other. Using the NEDS database, we also collected information on patients' sex, income, and zip codes.

2.3. Statistical analysis

We used descriptive statistics to calculate the mean along with their 95% confidence intervals (CI) for baseline descriptive characteristics. We performed a multivariable logistic regression analysis controlling for sociodemographics and medical comorbidities to determine the association between insurance type, presence of MHD, and ED admissions for ACSC. In order to determine if MHD modifies the relationship between Medicaid insurance and ED admissions for ACSC, we created an interaction variable (Medicaid * MHD). We report odds ratios (ORs) and 95% CI for variables included in the multivariate logistic regression model. We applied SURVEY commands to account for the complex survey design and provide national estimates. All data analyses were conducted in SAS 9.3 (SAS Inc, Cary, NC).

3. Results

There were 131 million ED visits in the year of 2011. Of these, there were 6.5 million admissions from the ED and, after applying our exclusion criteria, 1.4 million admissions were included in our study. The patient characteristics of those individuals, weighted as a total and separated by ACSC vs non-ACSC admission, are listed in Table 1. Individuals between the ages of 45 and 64 years made up the majority of admissions (29.55% [95% CI, 29.48–29.63] and 31.45% [95% CI, 31.37–31.53], respectively). Half of the admitted population was female (49.96%; 95% CI, 49.88–50.04). A slightly higher, but statistically significant, portion of the population with an MHD was admitted for an ACSC (46.04%; 95% CI, 45.89–46.19) compared with a non-ACSC (43.97%; 95% CI, 43.87–44.07).

Using an adjusted logistic regression analysis for confounders, there was an interaction between insurance and MHD in association with admission for an ACSC ($P < .001$; Fig. 1). Medicaid patients without MHD had increased odds of being admitted for an ACSC compared with patients with private insurance and no MHD (OR, 1.33; 95% CI, 1.31–1.35). Among admissions listing MHD as a comorbidity, those covered by Medicaid were 1.41 times more likely to be for an ACSC compared with privately insured patients.

A total of 32.6% (95% CI, 32.5%–32.7%) of ED admissions were for an ACSC. After controlling for confounding factors, this population was more likely to be 55 to 64 years of age than younger, more likely to be female, more likely to be insured by Medicaid, self-pay or other compared with privately insured, and more likely to have a lower income (Table 2).

Certain MHDs were more likely to be associated with admission to the hospital for ACSC than others (Table 3). The presence of an anxiety disorder, mood disorder, or history of an MHD was more closely associated with admission in relation to other MHDs.

Lastly, lower extremity amputation from a diabetic complication was the leading cause of admission for both individuals with (29.72%) and without an MHD (39.46%) (Appendix 1). Chronic obstructive pulmonary disease (COPD) was the next highest admission for individuals with MHD, with 5.03% of the MHD population admitted for this diagnosis, whereas only 1.24% of individuals without MHD were admitted for COPD. The remaining admission diagnoses by presence or absence of MHD are presented in Appendix 1.

4. Discussion

In this national study, we found that although patients with Medicaid have higher rates of ACSC admission when compared with those who are privately insured, even higher rates are seen for those who also have MHD. Our study is novel in that we investigate the interaction between MHD and Medicaid insurance. This interaction suggests that MHD is an important comorbidity to evaluate when assessing avoidable ED use and developing interventions that reduce avoidable hospital admissions.

Medicaid enrollees are among those with less socioeconomic resources, with complex medical problems, or in many cases, both. Low-

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