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Emergency department utilization among Medicaid beneficiaries with schizophrenia and diabetes: The consequences of increasing medical complexity

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ABSTRACT

Objective: Individuals with both physical and mental health problems may have elevated levels of emergency department (ED) service utilization either for index conditions or for associated comorbidities. This study examines the use of ED services by Medicaid beneficiaries with comorbid diabetes and schizophrenia, a dyad with particularly high levels of clinical complexity.

Methods: Retrospective cohort analysis of claims data for Medicaid beneficiaries with both schizophrenia and diabetes from fourteen Southern states was compared with patients with diabetes only, schizophrenia only, and patients with any diagnosis other than schizophrenia and diabetes. Key outcome variables for individuals with comorbid schizophrenia and diabetes were ED visits for diabetes, mental health-related conditions, and other causes.

Results: Medicaid patients with comorbid diabetes and schizophrenia had an average number of 7.5 ED visits per year, compared to the sample Medicaid population with neither diabetes nor schizophrenia (1.9 ED visits per year), diabetes only (4.7 ED visits per year), and schizophrenia only (5.3 ED visits per year). Greater numbers of comorbidities (over and above diabetes and schizophrenia) were associated with substantial increases in diabetes-related, mental health-related and all-cause ED visits. Most ED visits in all patients, but especially in patients with more comorbidities, were for causes other than diabetes or mental health-related conditions.

Conclusion: Most ED utilization by individuals with diabetes and schizophrenia is for increasing numbers of comorbidities rather than the index conditions. Improving care in this population will require management of both index conditions as well as comorbid ones.

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1. Introduction

In recent years, there has been increasing focus on improving health outcomes for complex patients with multiple, comorbid, chronic diseases. The US Department of Health and Human Services (HHS) has developed a national strategy for improving the health of individuals with multiple chronic conditions (Parekh et al., 2011). Specific combinations of comorbid conditions create unique challenges to the overall health and mortality risk of patients with multiple chronic conditions, particularly comorbid physical and mental illnesses. Morbidity and mortality in individuals with serious mental illness have been well documented, with rates of excess mortality ranging from 8 years to 25 years (Colton and Manderscheid, 2006; Parks et al., 2006; Druss et al., 2011). This excess mortality is attributed most often to chronic physical conditions, and complicated by quality of care and socioeconomic status (Colton and Manderscheid, 2006; Parks et al., 2006; Druss et al., 2011).

There is a strong association with schizophrenia, diabetes, and an increased risk or poor physical health and disability (Dixon et al., 2000). Prevalence rates of diabetes mellitus in patients with schizophrenia are estimated at approximately 15%–21% in previous studies, about two to four times greater than the general population (Dixon et al., 2000; Subramaniam et al., 2003; Bushe and Holt, 2004; Mai et al., 2011). The concurrence of both conditions makes health management complex

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due to the negative effects on medication adherence for physical illnesses (Piette et al., 2007) and self-care management (Dickerson et al., 2005). In addition, hereditary factors, lifestyle factors, downward social drift, and metabolic syndrome associated with atypical antipsychotic use further contribute to the combined complexity and poor health and social outcomes associated with these diseases (Mukherjee et al., 1996).

Emergency department (ED) visits for mental health-related causes have been rising in recent years, and are responsible for significant burden of care for EDs (Larkin et al., 2005). This increase in visits contributes to ED overcrowding, which can result in poor quality of care (American College of Emergency Physicians, 2008). Mental illness and psychological distress have been associated with higher rates of all-cause ED visits among various populations (Fogarty et al., 2008; Lin et al., 2012). With the rise in mental health-related ED visits each year, higher rates of ED utilization have been associated with psychosis, African American race/ethnicity, and being insured with Medicaid, although these findings are not always consistent (Hazlett et al., 2004; Pandya et al., 2009).

There is limited research on ED utilization among individuals with serious mental illness, and schizophrenia in particular; however, previous reports have shown increased rates of ED utilization for individuals with serious mental illness when compared to the general population (Dickerson et al., 2003; Hackman et al., 2006; Hendrie et al., 2013). Among individuals with schizophrenia, rates of ED utilization and recurrent ED visits are more common when compared to patients who do not have schizophrenia, with 69% of the study population with a diagnosis of schizophrenia having at least one ED visit in two years (Dhossche and Ghani, 1998; Salsberry et al., 2005).

In patients with schizophrenia, certain comorbidities have been associated with increased ED visits, including substance use disorders (Curran et al., 2003). Furthermore, individuals treated with atypical antipsychotic medications have lower rates of ED utilization than individuals treated with typical antipsychotics (Al-Zakwani et al., 2003).

Although few studies have examined ED utilization rates in the chronic comorbid conditions of schizophrenia and diabetes, analysis of chronic physical illness and comorbid serious mental illness (depression) found higher rates of utilization among those with a diagnosis of depression (Himelhoch et al., 2004). Previous studies have examined the impact of schizophrenia with other chronic physical conditions, a study in Canada found that individuals with schizophrenia have greater rates of coronary artery disease, although they are less likely to visit a specialist or undergo coronary revascularization than individuals without schizophrenia (Bresee et al., 2012). In examining the management of diabetes in individuals with schizophrenia, one study determined that people with schizophrenia and diabetes had a 74% greater risk of hospital and ED visits for hypo- or hyperglycemia compared to those with diabetes only (no schizophrenia) (Becker and Hux, 2011). Similarly, individuals with diabetes have higher rates of ED utilization than those without diabetes, but these findings are inconsistent (McCusker et al., 2000; Egede, 2004). Access to a primary care physician is associated with a lower risk of ED utilization for conditions of lower severity (Moineddin et al., 2011). We were unable to find studies that classified the type of ED visit among individuals with schizophrenia and diabetes.

Therefore, because there is a dearth of consistent literature on ED utilization for the specific comorbidity of schizophrenia and diabetes, we undertook this study to evaluate overall ED utilization rates and the causes of ED visits for patients with schizophrenia with and without comorbid diabetes. Also, we evaluated the risk associated with varying types of ED visits in patients with comorbid diabetes and schizophrenia. Because schizophrenia and diabetes can commonly co-occur, and comorbid chronic disease is of great concern in focusing on whole-person outcomes, we seek to better understand the reasons why patients with schizophrenia and diabetes access ED services. A greater understanding of ED utilization in this specific comorbid population can lead to specific, targeted interventions that can improve health outcomes in this multiple chronic conditions population.

2. Materials and methods

This study used claims data extracted from the 2006 and 2007 Medicaid Analytic Extract (MAX) files obtained from the Centers for Medicare and Medicaid Services (CMS). Secondary data analysis of large population claims data provides several key advantages when studying patients with multiple chronic conditions. First, using Medicaid claims data allows for evaluation of illnesses in a large population, which improves statistical power to address service use patterns related to comorbidity. Second, because Medicaid is provided for aged, blind, disabled segments of low income populations, it can be used to address quality and access to care in vulnerable individuals. Finally, analysis of comorbid conditions in this particular population is important, as the prevalence of this particular study population could increase in the coming years with planned Medicaid expansion under the Affordable Care Act.

2.1. Study population

2.1.1. Inclusion and exclusion criteria

From the Medicaid personal summary file, we identified adults ages 18 to 64 years residing in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, and Virginia during the years of 2006 and 2007 (n = 8 376 324). Patients with both Medicaid and Medicare (dual eligible) (n = 2 732 637) or those who participated in a Medicaid Health Maintenance Organization (HMO) plan (n = 1 364 422) were excluded because the necessary encounter-level data could not be reliably accessed from our dataset.

For the purposes of this study, patients were categorized into the following four groups: a) patients with diabetes and without schizophrenia (diabetes only), b) patients with schizophrenia and without diabetes (schizophrenia only), c) patients with both schizophrenia and diabetes, and d) patients with any diagnosis other than schizophrenia or diabetes (neither schizophrenia nor diabetes). Patients that were categorized into these four groups had a varied number of additional comorbid conditions, ranging from none to greater than nine. Claims related to diabetes were defined as claims billed with primary or secondary diagnosis using *International Classification of Diseases 9* (ICD-9) diagnostic codes 250.xx, 357.2x, 362.0 or 366.41 (diabetes mellitus and diseases that are complications of diabetes mellitus). Patients with schizophrenia were defined as claims billed with ICD-9 diagnostic codes 295.xx. Consistent with previous Medicaid claims data research, in order to improve case-finding accuracy, a person was included in each group according to the specific diagnosis or diagnoses if they had one billed claim for a hospitalization from the inpatient (IP) file, or at least two billed claims on different service dates from the outpatient (OT) file (Lurie et al., 1992). Patients categorized as "neither schizophrenia nor diabetes" were defined as those patients that did not have a primary diagnosis of diabetes or schizophrenia in the IP file, and did not have at least two diagnoses of schizophrenia or diabetes in the OT file.

2.2. Measures

2.2.1. Outcome variables

ED visits were divided into the following three categories: a) ED visits resulting from a primary diagnosis of diabetes (diabetes-related ED visits), b) ED visits resulting from a primary mental health diagnosis (mental health-related ED visits), and c) ED visits for all other medical diagnoses (all other-cause ED visits). Mental health diagnoses included all encounters with ICD-9 primary diagnostic codes 290.xx–298.xx (psychoses), 300.xx (neurotic disorders), 303.xx–305.xx (psychoactive substance), and 308.xx–316.xx (other (primarily adult onset) and mental disorders diagnosed in childhood). ED visits were identified by revenue codes 450–459 or a place of service code of 23.

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