Characterization and Charges of Emergency Department Encounters and Restraints in Patients with Acute Agitation and Schizophrenia or Bipolar Disorder Using Nationwide Emergency Department Sample Data

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Introduction

- Worldwide prevalence estimates indicate that ~20 million people have schizophrenia and ~45 million people have bipolar disorder[1]
- Up to 31% of patients with schizophrenia or bipolar disorder experience episodes of acute agitation,[2] which is characterized by restlessness, mental unease, uncooperativeness, anxiety, excitement, and inappropriate excessive verbal and motor behaviors[3,4]
- Episodes of acute agitation pose challenges for the patient and staff in emergency settings, complicate care, and may escalate into situations with risk of harm to the patient and others[4]
- Physical restraints (Figure 1) are used in 1% – 1.4% of ED encounters when agitated patients become aggressive[5,6]
- Data for emergency department (ED) agitation and patterns of physical restraint usage and hospital resource utilization are available in the US, although these outcomes have not been well characterized in patients with schizophrenia and bipolar disorder

Objectives

- Estimate 2018 prevalence of ED encounters involving acute agitation associated with schizophrenia and bipolar disorder in US adults using Nationwide Emergency Department Sample Dataset (NEDS) from the Healthcare Cost and Utilization Project
- Secondary objectives:
  - Characterize patient demographics and admission/presentation
  - Estimate healthcare resource utilization as hospital charges
  - Outline discharge transition
  - Describe use and incremental charges with physical restraint use

Methods

- This was a retrospective claims analysis using 2018 NEDS data in adults aged ≥18 years
- Participants who were coded for schizophrenia, bipolar disorder, and associated disorders using ICD-10-CM were included
- Participants were stratified based on the presence or absence of agitation according to ICD-10-CM code assignment
- Assessments included encounter frequency; patient characteristics (age, sex, comorbidities, payer type); hospital characteristics; healthcare resource utilization (procedures, charges); patient disposition from the ED
- Comparison of ED charges with and without physical restraints
- Data analysis and reporting as mean and standard deviation for continuous variables and count or percentage for categorical variables

Table 1. Total Charges in Participants With and Without Physical Restraints

Median (Range), $	Schizophrenia (N=55,978)	Bipolar disorder (N=40,280)
With restraint	3,477 (2,320-5,640)	3,464 (2,211-5,666)
Without restraint	3,143 (1,989-5,167)	3,000 (1,829-4,908)
P value*	<.001	<.001

* Non-parametric test for medians

Figure 1. Supine Patient in 4-Point Restraints[7]

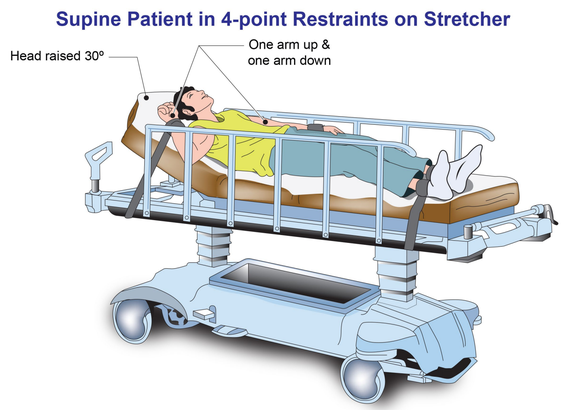

Table 2. Characterization and Total ED Charges

Endpoint	Schizophrenia + Agitation	Bipolar Disorder + Agitation
Prevalence per 10,000 adult ED records	4.9	3.5
Sex		
Men	62%	54%
Women	38%	46%
Comorbid conditions		
Neuropsychological disorders	46% - 58%	
Substance use disorders	50% - 55%	
Chronic conditions	36% - 39%	
Payers		
Medicare	38%	34%
Medicaid	39%	39%
Use of restraints, %	8 times more frequent in encounters with agitation vs without agitation	
Total charges (median)		
With Agitation Recorded	$3,183	$3,037
Without Agitation Recorded	$2,700	$2,714

RESULTS

- Median charges per encounter were significantly higher in encounters with restraint than without restraint (Table 1)
- There was a higher prevalence of agitation with schizophrenia than agitation with bipolar disorder (4.9 vs 3.5 per 10,000 records) (Table 2)
- Neuropsychological, substance use, or chronic comorbid conditions were common among agitated patients with bipolar disorder and schizophrenia (Table 2)
- Medicare or Medicaid were the most frequently reported payer types (Table 2)
- The use of physical restraints was 8 times more common among agitated patients vs those without agitation (Table 1)
- Median hospital charges were significantly higher in agitated patients than nonagitated patients with schizophrenia (P<.001) or bipolar disorder (P<.001). The cost increase associated with agitation was greater in schizophrenia than bipolar disorder (Table 2)

KEY FINDINGS

- Acute agitation and the use of physical restraints are associated with significantly increased total ED charges among patients with schizophrenia or bipolar disorder
- Verbal de-escalation and rapid agitation management in the ED setting is likely to significantly lower hospital resources
- Additional research is needed to confirm these findings and refine patient management strategies

References 1. *Lancet*. 2018;392:1789-1858; 2. https://www.ahdbonline.com/articles/2007-the-spectrum-of-agitation-associated-with-schizophrenia-and-bipolar-disorder; 3. *BMC Psychiatry*. 2018;18:104; 4. *West J Emerg Med*. 2016; 17(2):165-172; 5. *Acad Emerg Med*. 2020;27:943-950; 6. *JAMA Network Open*. 2021; 4(1):1-6. 7. Weingart S. Podcast 060 . https://emcrit.org/emcrit/human-bondage-chemical-takedown/ Published November 13, 2011. Accessed September 22, 2021. **Disclosures** This study was supported by BioXcel Therapeutics. SH and MK are employed by BioXcel Therapeutics; DB was a paid consultant of BioXcel Therapeutics.

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