Rehospitalization to a child and adolescent psychiatry unit: Role of trauma and bullying

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ABSTRACT

Objective: Psychiatric rehospitalizations results in a significant burden to patients, families, and health care systems. Understanding psychiatric rehospitalizations offers an opportunity to identify weaknesses in current systems of care. The objective of this study was to test the hypothesis that a history of trauma or ongoing bullying increases the risk of psychiatric rehospitalization.
Method: Retrospective cohort study of 366 individual patients (71% female) admitted to a pediatric psychiatry unit between 1/1/2015 and 12/31/2015. The primary outcome measure was rehospitalization to the same psychiatric hospital unit within one year of first discharge. Trauma was defined as having a history of Post-Traumatic Stress Disorder, Reactive Attachment Disorder, or a filed Suspected Abuse and Neglect of a Child report by the end of first hospitalization. Ongoing bullying was identified by medical record review.
Results: History of trauma (Odds Ratio (OR) = 3.2, 95% Confidence Interval (CI) = 1.8–5.6, p < 0.0001) and ongoing bullying (OR = 2.2, CI = 1.2–3.9, p = 0.009) were significantly associated with increased rates of re-hospitalizations. We controlled for the following covariates: Patient Health Questionnaire-9 Modified (PHQ-9M) score, gender, age, relative age, initial length of stay, disrupted family system, and sexual orientation/identity.
Conclusion: History of trauma or ongoing bullying are important risk factors for pediatric psychiatric re-hospitalization.

1. Introduction

It is estimated that 20–25% of children and adolescents in the United States will suffer from a mental health disorder across their lifetimes [1]. In youth ages 3 to 20, nearly 10% of all hospitalizations are directly related to mental health concerns resulting in annual estimated costs of over $3.5 billion [2,3]. It is also estimated that of those youth hospitalized, upward of 37% will be readmitted due to psychiatric reasons within one year [4].

Psychiatric rehospitalizations are a substantial burden for the mental health care system, inidvidual patients, and families. Many states across the country have a shortage of psychiatric beds for children and adolescents. This deficit in beds often leave numerous children boarding in emergency departments or non-psychiatric, medical beds [5]. This increases healthcare costs, possibly further exacerbates psychiatric disorders, and disrupts the lives of young people and their families [5,6].

Hospitalizations, particularly repeated hospitalizations, can impact the developmental trajectory of youth. Multiple inpatient treatment courses can disrupt academic progress, leading children and adolescents to fall behind in their schoolwork, resulting in increased stress upon discharge as well as interpersonal disconnection from their peers [6]. Hospitalizations often impact social and identity development. For example, numerous repeated hospitalizations may leave some young people feeling as if their mental health disorder defines their identity. The emotional and financial impact on individual families can also be substantial. An enhanced understanding of risk factors for re-hospitalization could assist health care systems in directing outpatient resources to decrease readmission rates and lower the cost of mental health care. In addition, understanding the phenomenon of re-hospitalization gives us an opportunity to identify the unmet needs of some of the most vulnerable patients.

To date, studies exploring risk factors leading to rehospitalization have had mixed results. In the adult literature, limited family support, poor treatment adherence, and prior history of psychiatric hospitalizations were predictors of rehospitalization [7,8]. There has not been strong evidence in the adult literature to support associations between specific diagnoses or illness severity and repeated hospitalizations

[8,9]. In the child and adolescent literature, there are several studies that have found associations between rehospitalization and youth diagnosed with affective disorders, behavioral disorders, and/or psychoses [4,10–12]. Recently, adolescent self-injurious behavior was found to be a predictor of readmission [13]. Other predictors of youth readmission have included post-discharge living environment, medication noncompliance, and type of aftercare [4,11]. Age, gender and race have not been found to consistently predict readmission [4]. Despite overwhelming evidence for chronic deleterious effects of trauma and violence on mental health [14–17], a history of abuse/trauma as a risk factor for rehospitalization has not been thoroughly investigated [4].

This study aims to understand the effects of two different subsets of psychosocial stressors on psychiatric rehospitalization. First, trauma effects on rehospitalization were evaluated, defined as diagnoses of Post-Traumatic Stress Disorder (PTSD), Reactive Attachment Disorder (RAD), or a history of a filed Suspected Abuse and Neglect of a Child (SANC) report. Second, since ongoing peer-aggression is one of the most frequent adverse events in youth [18], this study identified all youth who disclosed victimization by bullying as part of the factors leading to the first hospital admission. Definitive data on risk factors for rehospitalization would inform systems of care that provide targeted outpatent services and continuums of care.

2. Methods

We conducted a retrospective analysis of consecutive index admissions to the Child and Adolescent Acute Inpatient Psychiatric unit at Mayo Clinic in Rochester, Minnesota, during the study period between 1/1/2015 and 12/31/2015. This study was approved by the Mayo Clinic Institutional Review Board prior to conducting the retrospective analysis.

2.1. Participants and data collection

In order to focus on rehospitalizations within a year of initial psychiatric hospital admission, we excluded all subjects who were previously admitted to our unit between 1/1/2014 and 12/31/2014. We also excluded patients with diagnoses of eating disorders (since most are sent to long-term treatment facilities and therefore do not tend to be rehospitalized on the same acute psychiatric unit), schizophrenia, bipolar disorder, schizoaffective disorder, and other psychoses (due to longer lengths of stay compared to an average patient on the unit). We used discharge summaries of the initial hospitalization to establish the above diagnoses. Only patients living in southeast Minnesota at time of first admission were included in this study, as youth who do not live in the local area may be more likely to be readmitted to other hospitals closer to their homes and thus lost to follow up. The cohort consisted of residents from the following Minnesota counties: Olmsted (38.3%), Mower (8.2%), Goodhue (5.2%), Dodge (4.6%), Freeborn and Winona (both 4.1%), Blue Earth (3.8%), Wabasha (3.6%), Rice and Waseca (both 3.0%), Steele (2.7%), Dakota (2.5%), Fillmore (2.2%), Martin (1.3%), Le Sueur, Scott, Houston (all 1.1%), Brown, Faribault, McLeod, Nicollet (all 0.8%), Redwood and Cottonwood (both 0.5%).

The final cohort consisted of 366 individual patients (71% female) ages 11–18 years that were included in the study. Advanced Cohort Explorer (ACE) program was used to collect data from Mayo Clinic electronic medical record database. The ACE is a clinical data repository maintained by Mayo Clinic which accesses standardized data maintained in a unified platform. Data is obtained from multiple clinical and hospital source systems and can efficiently search millions of patient records.

2.2. Identification of main subgroups

Patients with a history of trauma were identified by having a

diagnosis of PTSD, RAD, or a history of a filed SANC report by the time of the first psychiatric discharge in 2015. The diagnosis of RAD was included in this study given that "a pattern of extremes of insufficient care" is part of the criteria and it is classified as a trauma and stressor-related disorder [19]. Subjects experiencing ongoing bullying were identified by using ACE to search for the following key words in all 2015 clinical notes: bullying and bullied. Medical records were used to confirm that the key word reflected that the patient was a victim of ongoing bullying at the time of the first hospitalization. We did not differentiate between types of bullying, such as physical, verbal, or cyber bullying.

2.3. Covariates

We collected data on Patient Health Questionnaire-9 Modified (PHQ-9M) score at first psychiatric admission in 2015, age at first admission, gender, and length of initial psychiatric hospitalization. Additionally, since parental separation or divorce is a well described stressor [20], we used ACE to identify youth with disrupted family environments by searching for the following key words in clinical notes: adopted, stepmother, step-mother, stepfather, step-father, single parent household, orphan, orphaned, foster care. Since lesbian-gay-bisexual-transgender youth (LGBT) face a particular type of psychosocial stress [21–24], we identified youth who disclosed as LGBT by searching for the notes for the following key words: transsexual, transgender, homosexual, gay, lesbian, and gender dysphoria. A chart review was performed to confirm that words associated with LGBT status were used as a descriptor of the patient. Finally, youth who are younger then peers in their class, i.e. youth with lower relative age, also face increased psychosocial stressors [25]. We therefore added relative age as a covariate. School eligibility cutoff date in Olmsted County starts September 1st. Therefore, children born on September 1st will be youngest in class (i.e. exactly 5 years old on September 1st), and children born on September 2nd will be oldest (5 years and 364 days old on September 1st). We stratified all teenagers into "higher relative age group" (born 9/2 to 3/2) and "lower relative age group" (3/3 to 9/1). Though some children may enter school earlier, we believe such outliers would only introduce a minor error.

2.4. Main outcomes

Main outcome was occurrence of psychiatric rehospitalization at Mayo Clinic within 365 days from the date of first psychiatric discharge. Secondary outcome was the number of psychiatric rehospitalization days within 365 days after first discharge.

2.5. Statistical analysis

Statistical analyses were performed using JMP v13.0.0 (SAS Institute Inc.). Differences between groups (trauma versus no-trauma, bullied versus non-bullied) relative to the main outcome measure (rehospitalization within 365 days) were assessed for statistical significance using a stepwise linear regression process equivalent to an analysis of covariance (ANCOVA) model, testing for group effects and accounting simultaneously for potential effects of covariates. History of disrupted family environment, PHQ-9M score at initial admission, age at initial admission, relative age, gender, LGBT status, and length of first hospitalization were tested systematically for their effects on the main outcome measure and included in the model if they significantly improved the model goodness-of-fit.

3. Results

3.1. Demographic information

The final cohort consisted of 366 patients (71% female) ages 11–18