Associations of Restraint with Race and Ethnicity on an Adolescent Inpatient Psychiatry Service

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Introduction

Improving equity in healthcare practices necessitates the transparent examination of racism in hospital settings at every level of care, particularly in those practices with risk of harm or injury. Recent studies have reported significant associations between Black race and restraint in adult[1] and pediatric[2] emergency departments. Investigation of these relationships in inpatient pediatric psychiatric treatment settings is critical to understanding how pediatric mental health care may be affected by racial disparities with profound implications for clinical outcomes. However, this work is scarce, with only a few recent reports of associations between race and seclusion on inpatient units[3] and in residential settings.[4] The present study is a retrospective chart review of admissions to the adolescent inpatient service at a child and adolescent psychiatry hospital, examining differences in race, ethnicity, other demographic and admission characteristics for admissions with and without restraint or seclusion (R/S).

Methods

A query of the electronic medical record (EMR) provided retrospective demographic and R/S data for all admissions from an adolescent unit from June 2018 to June 2021. Among 1865 admissions, 459 involved R/S of 281 individual patients. Race was grouped into the following categories: Black or African American, Other (American Indian or Alaskan Native, Asian, Multiracial, Other), and White or Caucasian. The primary outcome of interest was R/S, focusing on the relationship of race and ethnicity with R/S for each admission. Length of stay (LOS) was grouped as follows: 0-3 days, 4-7 days, 8-14 days, 15-30 days, and 31+ days. Bivariate analyses examined the relationship of R/S with race, ethnicity, age, gender, and LOS, using independent samples t-tests and chi square one-way analysis of variance as appropriate.

The association of R/S, race, and covariates age, gender, and LOS, was examined using a generalized estimating equation. A binary logistic regression with a repeated subject effect (accounting for subjects' multiple admissions) regressed R/S onto race and adjusted for age, gender, and LOS. Adjusted models provided p-values testing model effects, the odds ratio (OR) of R/S with 95% confidence intervals (CIs) for race subgroups.

Results

Chi square analysis revealed an overall significant association of R/S and race (X^2 (2)=16.81; p<0.001), but not ethnicity (p=0.746). In the regression model adjusted for age, gender, and LOS, Black or African American patients were at significantly higher risk of R/S compared to White or Caucasian patients (OR=1.66, p=0.036). There was no significant difference in risk of R/S between White or Caucasian and Other patients (p=0.226). Younger age (p=0.004) and greater LOS (p<0.001) were significantly associated with R/S.

Table 1. Demographic characteristics.

	Restrained (459)	Not Restrained (1406)	p-value
Age, M (SD)	14.67 (1.939)	15.12 (1.867)	<0.001
Gender, N (%) female	282 (61.4)	872 (62.0)	0.824
Race, N (%)			<0.001
Black or African American	74 (16.2)	131 (9.4)	
Other[1]	92 (20.1)	334 (24.1)	
White or Caucasian	291 (63.7)	922 (66.5)	
Ethnicity N (%)			0.518
Hispanic/Latinx	96 (20.9)	302 (21.5)	
Nonhispanic/Latinx	359 (78.2)	1082 (77)	
Length of stay, M (SD)	40.39 (40.761)	14.26 (21.738)	<0.001

[1]"Other" encompasses the following groups: American Indian or Alaskan Native (n=8), Asian (n=18), Multiracial (n=42), Other (n=358). Patients identified as Unknown (n=21 for race and n=26 for ethnicity) were not included in analyses.

Table 2. Interventions included in 'Restraint'.

As defined by Center for Medicare and Medicaid Services of the United States Department of Health and Human Services[1]	
Restraint - Any manual method, physical or mechanical device, material or equipment that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely. Seclusion - The involuntary confinement of a patient alone in a room or area from which the patient is physically prevented from leaving. Seclusion may be used only for the management of violent or self-destructive behavior.	
Specific interventions used in reference hospital as learned in mandatory Safety-Care® certification training[2]	Escort: supportive, 2-person forward, 2-person reverse
	Hold: 1-person stability, 2-person stability, floor seated stability, chair stability, 3-person supine stability
	Mechanical: papoose board, 6-point restraint board, SoftGuard restraint chair
	Seclusion: exit blocked by person, mat, or closed door

1. Center for Medicare and Medicaid Services. *CMS Manual System*. 42 CFR 482.13(e)(1)(i, ii).
2. QBS, Inc. *Behavioral Safety Training Trainee Manual.* SC-1 Bradley Hospital Crisis Management Policy. Version 6 Revision April 2021.

Conclusions

These findings highlight a critical healthcare disparity related to race on an inpatient adolescent psychiatry service. Similar to other structural disparities, there is likely a combination of individual and systemic factors leading to discriminatory practices in the use of R/S. The association of R/S risk with age and LOS may be secondary to clinical presentation, however the relationship with race remained significant even after adjustment for these factors. The findings reported here are important because racial disparities in R/S may shape response to treatment in the inpatient setting and alter future engagement with psychiatric care, thus producing deleterious consequence for immediate and downstream mental health outcomes.

Future Directions

- Co-authors are collecting focus group data from hospital stakeholders, including unit-based staff, nurses, and clinical leaders. Focus groups will aim to identify factors that contribute to these disparities and opportunities to reduce R/S, with the goal of enabling the design of targeted interventions.
- Collaborate with other institutions to aggregate multi-site data to characterize the scope of R/S race disparities. Collective work across institutions will encourage hospital leaders to prioritize addressing disparities and guide the development and promotion of equitable interventions in the psychiatric care of children and adolescents.

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