Disparities in Care: The Role of Race on the Utilization of Physical Restraints in the Emergency Setting

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Aim

The purpose of this study was to determine the role of race in emergency physical restraint. We hypothesized that patients who identify as Black or African American would be more likely than patients who identify as White to undergo physical restraint in the emergency department. We additionally examined whether male sex, public or uninsured status, younger age, diagnoses of a substance use disorder, bipolar disorder, or psychosis, homelessness, and a history of violence would increase a patient's risk of restraint. Our primary outcome was association between patient-reported race and application of physical restraint during unique emergency department visits.

Background

- Race-based bias in healthcare occurs at organizational, structural, and clinical levels, and impacts emergency medical and mental health care (1, 2)
- Black patients have been shown to have significantly longer ED wait times, receive differential prescription of opioid analgesia, and are less likely to receive thrombolytic therapy for acute ischemic stroke (3-5)
- Limited literature exists on the role of race in rates of restraint in the emergency medicine setting
- Restraints can have serious adverse outcomes including aspiration, physical trauma, and psychological distress (6-8)
- Vulnerable populations (patients with psychiatric illness, substance use problems) are more likely to undergo restraint (9), and identifying the role of race and ethnicity in rates of restraint use in the emergency department may highlight areas for improvement and guide interventions to address health disparities

Methods

A retrospective chart analysis was performed, querying all adult (>18 years of age) emergency department (ED) visits at Massachusetts General Hospital from a two-year period between January 1, 2016 and January 2, 2018 with any chief complaint.

Variables extracted:

- Medical record #
- ED arrival date/time
- Age
- Sex (assigned)
- Primary race (patient self-selected)
- Restraint ordered
- Discharge diagnosis
- Homelessness status
- Insurance
- Presence of "Safety Risk Flag"

Our primary outcome was association between patient-reported race and restraint order during unique emergency department visits. We also examined the independent effects of sex, insurance, age, diagnosis, homelessness status, and violence on the use of restraint, in addition to controlling for these factors when examining the effect of race.

Demographics

Variable	Total ED visits	Visits with restraint
Sex		
M	101205 (51.9%)	1813 (68.2%)
Age		
	50.3 (20.2, 18-108)	47.2 (19.0, 18-107)
Race		
American Indian or Alaskan Native	386 (0.2%)	4 (0.2%)
Asian	8431 (4.3%)	67 (2.5%)
Black	19506 (10.0%)	306 (11.5%)
Hispanic or Latino	2552 (1.3%)	28 (1.0%)
White	132256 (67.8%)	1795 (67.5%)
Other	20879 (10.7%)	253 (9.5%)
Declined	1338 (0.7%)	12 (0.5%)
Unavailable	9744 (5.0%)	193 (7.3%)
Homelessness Status		
Yes	1512 (0.8%)	491 (18.5%)
Insurance		
Public	43002 (22.0%)	1030 (38.8%)
Private	141912 (72.7%)	1391 (52.3%)
Uninsured	10178 (5.2%)	237 (8.9%)

Statistics: Counts (Percentage of column total) for categorical; Mean (Standard deviation, min - max) for continuous.

Results

Risk of restraint by race

Race	Risk % (CI)	Risk ratio compared to whites (CI)	p-value
Asian	0.80 [0.62,1.03]	0.71 [0.55,0.92]	0.009*
Hispanic or Latino	1.00 [0.67,1.50]	0.89 [0.59,1.33]	0.568
Declined	1.00 [0.57,1.76]	0.89 [0.50,1.56]	0.677
Other	1.11 [0.96,1.28]	0.98 [0.84,1.14]	0.800
White	1.13 [1.07,1.19]		
Black or African American	1.37 [1.20,1.57]	1.22 [1.05,1.40]	0.007*
Native Hawaiian or Other Pacific Islander	1.48 [0.37,5.94]	1.31 [0.33,5.26]	0.705
American Indian or Alaskan Native	1.52 [0.57,4.06]	1.35 [0.51,3.60]	0.548
Unavailable	2.00 [1.73,2.31]	1.77 [1.52,2.07]	<0.001*

* indicates statistical significance p<0.05

- **There was an overall effect of race on patient restraint observed (p<0.0001).**
  - This effect remained when controlling for sex, insurance, age, diagnosis, homelessness, and violence – there were no identified cofounders
- Risk of restraint across visits by black and white individuals was analyzed. **Black men were more likely to be restrained than white men** (RR=1.36, 95% CI [1.15,1.61], p<0.001), and **black patients without a history of violence were more likely to be restrained than white patients without a history of violence** (RR=1.18, 95% CI [1.02, 1.37], p=0.025)

Effects of other variables:

- In addition to race, **there were significant independent effects of sex, insurance, age, diagnosis, homelessness, and history of violence on risk of restraint** (all p<0.0001).
- **Males** were twice as likely to be restrained (RR=1.98, 95% CI [1.80, 2.18)
- Individuals with **public insurance** were 2.3x more likely to be restrained (RR=2.26, 95% CI [2.05, 2.49])
- Individuals **without insurance** were 2.4x more likely to be restrained (RR=2.41, 95% CI [2.08, 2.81])
- Individuals >50 years of age were less likely to be restrained (RR=0.73, 95% CI [0.67, 0.81])
- Individuals with **bipolar or psychotic disorder diagnoses** were nearly ten times more likely to be restrained (RR=9.76, 95% CI [7.97, 11.96])
- Individuals with **substance use disorder diagnoses** were more than eight times more likely to be restrained (RR=8.19, 95% CI [7.28, 9.22])
- **Homeless** individuals were nearly six times more likely to be restrained than those who were housed (RR=5.77, 95% CI [5.06, 6.58])
- Individuals with a **history of violence** were 13x more likely to be restrained (RR=13.43, 95% CI [10.89, 16.56])

Conclusions

These results warrant a careful examination of current practices and potential implicit biases, not only at our institution, but in emergency departments across the country, for ways in which race-based bias contributes to disparate provision of care. Efforts are ongoing at our institution, in conversation with police and security, emergency department leadership, nursing, and clinician providers on how to thoughtfully address and begin the process of rectifying the disparities highlighted here.

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