

Disparities in Emergency Department Wait Time Among Patients with Mental Health and Substance-Related Disorders

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Abstract

This study examined disparities in emergency department (ED) wait time for patients with mental health and substance-related disorders (PwMHSDs), using data from the 2009–2011 National Hospital Ambulatory Medical Care Survey (NHAMCS). Wait time was defined as the time between arrival at ED and being seen by an ED provider. Results from multivariable regression models show racial disparities, with non-Hispanic Black PwMHSDs experiencing longer ED wait time, compared to non-Hispanic White PwMHSDs. A temporal decline in ED wait time was also observed over the study period. The findings of this study have implications for informing the development of policies tailored at facilitating the delivery of equitable emergency care services to all PwMHSDs.

Introduction

Crowding or overcrowding in Emergency Departments (ED) in the USA has been identified as a public health crisis by the Institute of Medicine and has been the focus of several research studies.^{1–3} Nine out of ten emergency department directors, participating in a nationwide survey of

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575 EDs in the USA, identified overcrowding as a problem in their ED.² Many argue that ED overcrowding occurs as a result of an imbalance between the supply and demand for ED services.^{4, 5} Specifically, while the number of ED visits has increased by about 40%, the number of EDs has declined by 12% over the past two decades.⁶

The increasing utilization of EDs by patients with mental health and substance-related disorders (PwMHSD) has been identified as a contributor to ED overcrowding.⁷ EDs often encounter difficulties in finding psychiatric inpatient beds for PwMHSDs. This often results in extended boarding times at the ED and consequently reductions in the number of available inpatient beds for the care of other patients.⁷ PwMHSDs often use EDs for care that might be as a result of direct complications of their underlying disorder or when access to primary care or behavioral health services is not available.^{8, 9}

ED utilization by PwMHSDs has been increasing at a faster rate than overall ED utilization.^{7, 10, 11} Between 2006 and 2011, for example, ED visits by PwMHSDs increased by 48 and 34% for substance-related disorders and alcohol-related disorders, respectively, compared to a 4.5% increase in overall ED visits.¹⁰ The evidence also suggests that PwMHSDs make up a large percentage of the population with multiple ED visits.^{12–14}

PwMHSDs are particularly more prone to experiencing prolonged ED wait time (defined as an extended waiting period between patients' arrival at the ED and when they are seen by an ED provider) because of the underlying challenges health care professionals have of being unprepared to provide them with care as well as the documented negative attitude by providers towards these patients.^{15–19} In a review of the disparities in health care provision for individuals with severe mental illness, Lawrence and Kisely²⁰ identified "the pervasive stigma" associated with mental illness by health care providers as a systemic barrier to health care provision for PwMHSDs. Prolonged wait time has been identified to have a direct negative impact on patients' health, their health seeking experience, and their overall health care costs.²¹

While ED wait time, in general, has extensively been examined for other conditions, very few studies have examined this issue with a focus on PwMHSDs. The existing studies characterizing the ED experience of PwMHSDs have primarily focused on total length of stay at the ED (the length of time between arrival and discharge) and on boarding time (the length of time PwMHSDs stay in the ED following a decision to admit). Studies examining ED visit duration (i.e., total length of ED stay) have shown that PwMHSDs experience longer ED visit duration compared to the general population,^{22, 23} partly due to the limited capacity of EDs, nationwide, to provide onsite mental health services.²⁴ Patient-level factors identified as being associated with ED visit duration include older age and being uninsured.²⁵ Like total length of ED stay, boarding time for PwMHSDs has also been shown to be influenced by both institutional factors (such as access to inpatient psychiatric beds) and patient characteristics (such as age, insurance type, and mental health condition).^{24, 26}

The overall length of stay at the ED by PwMHSDs can, however, be decomposed into component intervals: (a) the time to see an ED provider for medical clearance (ED wait time); (b) the time between medical clearance and receiving mental health evaluation (mental health professional response and evaluation time); and (c) time spent in the ED after disposition decision (i.e., boarding time, for admitted or transferred patients *or* time between mental health evaluation and discharge, for discharged patients).²⁷ Of the aforementioned component intervals, EDs can exert the greatest control on ED wait time as that is directly dependent on the ED internal operational processes and capacity. Thus, examining factors influencing ED wait time may help identify targeted opportunities for improving ED throughput and consequently improving the health seeking experience of PwMHSDs.

In a study examining the association between type of insurance and ED length of stay, Pearlmutter et al.²⁷ decomposed ED length of stay into its interval components and found that overall ED length of stay for PwMHSDs was primarily driven by boarding time. The authors

reported that ED wait time accounted for about 10% of total ED length of stay. Insurance type was found to be associated with boarding time and mental health professional response and evaluation time, but not with ED wait time. The effect of insurance on boarding time was found to vary depending on disposition. In general, uninsured PwMHSDs and Medicaid beneficiaries were more likely to experience longer boarding time. This study was, however, conducted in one state—Massachusetts—and focused mainly on the examination of disparities on the basis of insurance.

Using a nationally representative dataset, this present study seeks to add to the existing literature on the provision of emergency care to PwMHSDs by focusing on ED wait time. Specifically, the study examines whether or not disparities in ED wait time for PwMHSDs exist on the basis of race/ethnicity, insurance type, and geographical location. The findings of this study have implications for informing the development of policies tailored at facilitating the delivery of equitable emergency care services to all PwMHSDs.

Methods

Data and sample

Data for this study were obtained from the 2009–2011 National Hospital Ambulatory Medical Care Survey (NHAMCS). This survey is part of the ambulatory component of the National Health Care Survey, conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). The annual NHAMCS survey uses a four-stage probability sample of visits to non-institutional general and short-stay hospitals in the USA to examine the utilization of emergency health care services. The sample excludes federal, military, and Veterans Affairs facilities. The NHAMCS first samples hospitals within primary geographic sampling units, then samples emergency departments within hospitals, and finally patient visits within emergency departments. Hospital staff collects information on patients during a randomly assigned 4-week period. The sampling design of the NHAMCS has been previously described.²⁸

To examine variation in wait time among patients presenting to the ED with mental health and substance-related disorders and in line with previous studies,²⁹ the data were restricted to visits that met any one of the following criteria: primary or secondary diagnoses of a mental health- and/or substance-related problem (International Classification of Diseases, Ninth Revision (ICD-9-CM) diagnoses N290-N312) and self-inflicted injuries or suicide intent (ICD-9 diagnoses E950.0 to E959.9 or NHAMCS indicator for self-inflicted intentional injuries). The NHAMCS includes up to three ICD-9-CM codes per visit. All three codes were utilized in the identification of mental health- and substance-related visits. Mental health- and substance-related disorders were categorized as episodic mood disorders, psychoses, neuroses, depression, substance-related disorders, suicide attempts, and other (e.g., adjustment disorders, personality disorders, and disturbance of conduct).²⁹ Data were eliminated for visits made by PwMHSDs who were less than 18 years of age as well as for observations without information on wait time. The unit of analysis was an ED visit.

Measures

The dependent variable, wait time, was defined as the time between arrival at ED and being seen by an ED provider (i.e., a physician (MD/DO), nurse practitioner, or physician assistant). The outcome variable was log-transformed to approximate the normal distribution. The key independent variables assessed were racial/ethnic characteristics (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic other), insurance type (Medicare, Medicaid, uninsured and private insurance), and ED geographic location (rural and urban). Geographic location was

defined based on the Office of Management and Budget (OMB) rural-urban classification. All EDs located in a metropolitan statistical area (MSA) were classified as urban; all others (non-MSA) were classified as rural.

Patient-level covariates included gender, age, triage level, past ED visits, mental health condition, whether or not the patient arrived by ambulance, and time of visit (daytime versus evening/night; weekend versus weekday and season). Hospital-level covariates assessed included region and hospital ownership type (non-profit, government, or proprietary). Triage levels were assessed using a five-level classification system: immediate (evaluation expected immediately), emergent (evaluation within 15 min), urgent (evaluation within 15–60 min), semi-urgent (evaluation within 61–120 min), and non-urgent (evaluation within 121 min–24h). A year variable was also included to examine temporal trends.

Statistical analysis

Statistical analysis included bivariate comparisons using chi-square analysis and analysis of variance, as applicable. A multivariable linear regression model was used to examine the independent associations between log-transformed ED wait time and racial/ethnic group, insurance type, and geographic location. Stata MP 14.1 software was used for all analyses. Sample weights and survey complexity were taken into account in estimate derivation, using the svy package in Stata. Statistical significance was assessed at $p < 0.05$.

Results

The total number of visits for this study was 6534, representing 22,492,544 visits nationwide. The majority of visits were made by non-Hispanic Whites (66.1%), followed by non-Hispanic Blacks (19.1%), Hispanics (11.9%), and other non-Hispanic races (2.9%). Almost a quarter of visits were made by individuals with private insurance (22.1%). Medicare and Medicaid beneficiaries accounted for 18.2 and 24.6% of visits, respectively. Visits made by the uninsured PwMHSDs and those with other payment methods accounted for 23.0 and 12.2% of the total visits, respectively. The majority of visits occurred in EDs located in MSAs (86.6%), in the South (35.5%), and in EDs operated by non-profit organizations (72.9%) (Table 1).

The average age of PwMHSDs presenting to the ED over the study period was 42 years. The majority of visits were made by males (52.5%). Visits classified as immediate or emergent on the triage scale accounted for less than a quarter of all visits (22.4%). About a third of PwMHSDs (36.8%) arrived at the ED by ambulance. On average, PwMHSDs had made three visits to the ED within the last 12 months. The visits mostly occurred during the daytime (53.1%) and on weekdays (72.1%). PwMHSDs presented to the ED with substance-related disorders (39.2%), neuroses (19.9%), suicide or intentional injury (19.6%), psychoses (18.8%), depression (10.0%), mood disorders (8.7%), or other mental health disorder (7.8%) (Table 1).

Table 2 presents the results of a log-transformed linear specification model of ED wait time among PwMHSDs, after controlling for patient- and provider-level characteristics. Model 1 included only the key independent variables under consideration. Model 2 included all variables in model 1 in addition to patient-level covariates. Model 3 included all variables in model 2, in addition to hospital-level covariates.

Racial disparities in ED wait time for PwMHSDs were observed in model 1. These disparities remained even after adjusting for patient- and hospital-level factors in models 2 and 3. Specifically, after adjusting for both patient- and hospital-level covariates (model 3), ED wait time was 23.4% longer for non-Hispanic Blacks ($p < 0.05$), compared to non-Hispanic Whites. Wait time did not differ by insurance type or geographic location of the ED in all three model specifications.

ED wait time was longer for PwMHSDs requiring emergent care (55.9%; $p < 0.05$), urgent care (74.8%; $p < 0.01$), semi-urgent care (85.2%; $p < 0.001$), and non-urgent care (49.6%; $p < 0.05$) when

Table 1
Sample descriptive characteristics, pooled data

	Unweighted (% or mean) N=6534	Weighted (% or mean) N=22,492,544
Key independent variables		
Race/ethnicity		
<i>Non-Hispanic White</i>	60.7%	66.1%
<i>Non-Hispanic Black</i>	21.1%	19.1%
<i>Hispanic</i>	14.2%	11.9%
<i>Non-Hispanic Other</i>	4.0%	2.9%
Insurance		
<i>Private</i>	19.5%	22.1%
<i>Medicare</i>	18.4%	18.2%
<i>Medicaid</i>	28.0%	24.6%
<i>Uninsured</i>	20.4%	23.0%
<i>Other</i>	13.6%	12.2%
Metropolitan status		
<i>MSA</i>	90.6%	86.6%
<i>Non-MSA</i>	9.4%	13.4%
Patient-level covariates		
Gender		
<i>Female</i>	45.6%	47.5%
<i>Male</i>	54.4%	52.5%
Age, mean (standard error)	42.2 (0.21)	42.0 (0.34)
Triage level		
<i>Immediate (evaluate immediately)</i>	1.8%	2.2%
<i>Emergent (evaluate within 1–14 min)</i>	19.4%	20.2%
<i>Urgent (evaluate within 15–60 min)</i>	47.2%	47.3%
<i>Semi-urgent (evaluate within 61–120 min)</i>	22.1%	22.0%
<i>Non-urgent (evaluate within 121 min and 24 h)</i>	5.3%	4.8%
<i>Unknown</i>	4.2%	3.5%
Arrival by ambulance		
<i>Yes</i>	36.4%	36.8%
<i>No</i>	59.3%	59.4%
<i>Unknown</i>	4.3%	3.8%
Past visits in 12 months, mean (standard error)	2.5 (0.09)	3.0 (0.24)
Episodic mood disorders	12.8%	8.7%
Psychoses	21.4%	18.8%
Neuroses	18.0%	19.9%
Depression	10.8%	10.0%
Suicide or intentional injury	17.9%	19.6%
Substance use-related disorders	38.5%	39.2%
Other mental health disorders	7.8%	7.8%
Daytime ED visit		
<i>Yes</i>	54.5%	53.1%

Table 1
(continued)

	Unweighted (% or mean) N=6534	Weighted (% or mean) N=22,492,544
No	45.5%	46.9%
Weekend ED visit		
Yes	27.1%	27.9%
No	72.9%	72.1%
Season ED visit occurred		
Winter	22.4%	22.3%
Spring	26.7%	24.8%
Summer	25.9%	27.6%
Fall	25.0%	25.3%
Hospital-level covariates		
Region		
Northeast	31.2%	19.7%
Midwest	17.8%	23.2%
South	25.3%	35.5%
West	22.7%	21.6%
Hospital ownership		
Nonprofit organization	65.6%	72.9%
Government	25.9%	17.2%
Proprietary	8.5%	9.9%
Year		
2009	31.5%	31.2%
2010	34.5%	32.1%
2011	34.1%	36.7%

Notes: Mental health disorder types were identified based on the top three diagnoses (ICD-9 codes); patients could present with multiple disorders. As such, mental health disorder types described in the above table were not mutually exclusive. Percentages may not add up to 100% due to rounding

compared to immediate care. ED wait time was also found to be longer for PwMHSDs who did not arrive at the ED by ambulance (36.9%; $p<0.001$) and those who presented to the ED with episodic mood disorders (41.5% compared with other; $p<0.01$) or depression (19.1% compared with other; $p<0.05$). Males PwMHSDs experienced 15.6% shorter ED wait time ($p<0.01$), compared with females. ED wait time was also 33.8% shorter for visits occurring in for-profit or proprietary EDs, compared with ED visits occurring in non-profit organizations ($p<0.05$). Temporal declines in ED wait time were observed in 2010 (14.8% shorter; $p<0.05$) and in 2011 (21.0% shorter; $p<0.05$), compared to 2009.

Figures 1, 2, and 3 show adjusted average ED wait times for PwMHSDs by race/ethnicity, geographic location, and insurance type.

Discussion

This study examined disparities in wait time among the population of PwMHSDs presenting to the EDs in the USA between 2009 and 2011. The findings indicate a decline in ED wait time for

Table 2

Predictors of log-transformed emergency department wait times for patients with mental health and substance-related disorders, 18 years and older

	Model 1			Model 2			Model 3		
	Adjusted % change	95% CI		Adjusted % change	95% CI		Adjusted % change	95% CI	
Key independent variables									
Race/ethnicity									
Non-Hispanic White	Ref	—	—	Ref	—	—	Ref	—	—
Non-Hispanic Black	26.8%**	10.7%	45.4%	22.5%*	3.4%	45.0%	23.4%*	4.9%	45.3%
Hispanic	−5.5%	−18.4%	9.5%	−0.7%	−17.3%	19.3%	2.3%	−14.9%	22.9%
Non-Hispanic Other	2.2%	−18.3%	27.7%	6.5%	−15.4%	33.9%	9.8%	−12.0%	37.1%
Insurance									
Private	Ref	—	—	Ref	—	—	Ref	—	—
Medicare	−1.9%	−13.9%	11.8%	1.3%	−16.9%	23.5%	0.8%	−17.7%	23.4%
Medicaid	7.5%	−7.6%	25.1%	14.0%	−4.3%	35.8%	16.5%	−2.4%	39.2%
Uninsured	8.5%	−5.1%	24.1%	17.0%	−0.7%	37.7%	15.2%	−2.1%	35.6%
Other	−0.7%	−15.7%	17.0%	15.3%	−4.2%	38.8%	18.7%	−3.0%	45.4%
Metropolitan status									
MSA	Ref	—	—	Ref	—	—	Ref	—	—
Non-MSA	−24.5%	−44.0%	1.7%	−16.5%	−37.3%	11.1%	−17.5%	−36.2%	6.6%
Patient-level covariates									
Gender									
Female	Ref	—	—	Ref	—	—	Ref	—	—
Male	−17.2%**	−25.7%	−7.7%	−15.6%**	−24.2%	−5.9%	−15.6%**	−24.2%	−5.9%
Age	0.0%	−0.4%	0.4%	0.0%	−0.4%	0.4%	0.0%	−0.4%	0.4%
Triage level									
Immediate (evaluate immediately)	Ref	—	—	Ref	—	—	Ref	—	—
Emergent (evaluate within 1–14 min)	60.3%*	11.8%	129.8%	55.9%*	129.8%	9.2%	55.9%*	9.2%	122.4%
Urgent (evaluate within 15–60 min)	82.5%***	32.7%	151.0%	74.8%**	151.0%	27.7%	74.8%**	27.7%	139.3%

Table 2
(continued)

	Model 1	Model 2	Model 3
	Adjusted % change	Adjusted % change	Adjusted % change
	95% CI	95% CI	95% CI
Semi-urgent (evaluate within 61–120 min)	91.9%***	36.6%	169.7% 33.1% 157.7%
Non-urgent (evaluate within 121 min and 24 h)	54.0%	7.7%	120.2% 7.3% 108.7%
Unknown	38.5%	–23.2%	149.7% –18.6% 148.3%
Arrival by ambulance			
Yes	Ref	–	Ref –
No	38.4%***	23.3%	55.4% 21.9% 53.7%
Unknown	29.5%*	1.2%	65.8% 0.2% 63.9%
Past visits in 12 months	0.1%	–0.5%	0.8% –0.6% 0.7%
Episodic mood disorders			
No	Ref	–	Ref –
Yes	41.0%***	15.1%	72.6% 15.9% 72.8%
Psychoses			
No	Ref	–	Ref –
Yes	9.1%	–5.3%	25.7% –5.6% 23.8%
Neuroses			
No	Ref	–	Ref –
Yes	–8.8%	–22.7%	7.7% –22.9% 7.8%
Depression			
No	Ref	–	Ref –
Yes	19.3%*	0.0%	42.3% 0.0% 41.7%
Suicide or intentional injury			
Yes	Ref	–	Ref –
No	–4.2%	–20.2%	15.1% –19.1% 14.2%

Table 2
(continued)

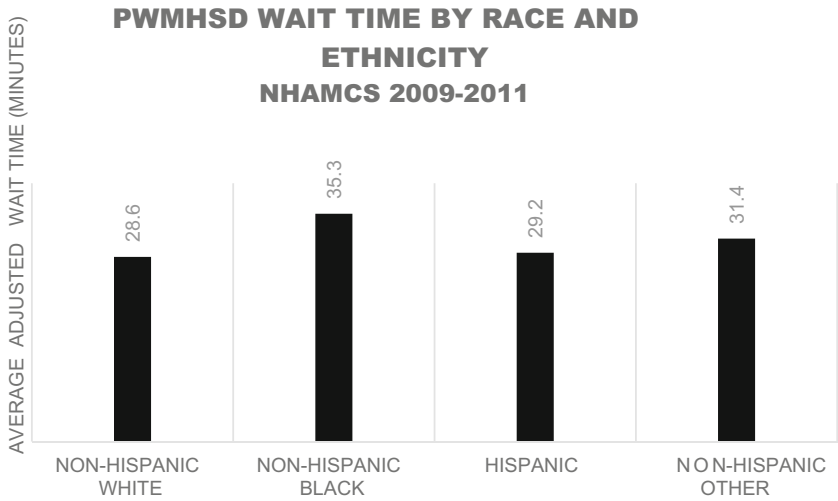
	Model 1	Model 2	Model 3
	Adjusted % change	Adjusted % change	Adjusted % change
	95% CI	95% CI	95% CI
Substance use-related disorders			
No	Ref	Ref	Ref
Yes	7.9%	7.2%	23.6%
Other mental health disorders			
No	Ref	Ref	Ref
Yes	28.5%	27.3%	64.8%
Daytime ED visit			
No	Ref	Ref	Ref
Yes	-7.3%	-7.9%	1.9%
Weekend ED visit			
No	Ref	Ref	Ref
Yes	-6.4%	-7.6%	3.4%
Season ED visit occurred			
Winter	Ref	Ref	Ref
Spring	12.2%	10.5%	37.6%
Summer	-4.8%	-4.4%	15.8%
Fall	3.8%	5.2%	28.3%
Hospital-level covariates			
Region			
Northeast	Ref	Ref	Ref
Midwest	-19.3%	-19.3%	3.5%
South	16.4%	16.4%	43.6%
West	4.5%	4.5%	29.8%
Hospital ownership			
Non-profit organization	Ref	Ref	Ref

Table 2
(continued)

[illegible]Adjusted percent change computed as follows: $(e^{\hat{\beta}} - 1) * 100$

* $p<0.05$; ** $p<0.01$; *** $p<0.001$

Figure 1
Adjusted average ED wait time for PwMHSDs by race and ethnicity



PwMHSDs in 2010 and 2011, compared to 2009. Racial disparities were observed, with wait time found to be significantly longer for non-Hispanic Black PwMHSDs, compared to non-Hispanic White PwMHSDs. In contrast to other studies that have found ED wait time to be longer in urban locations,³⁰ in this study, wait time was found to be statistically similar for PwMHSDs irrespective of rural/urban location of the ED. Further, ED wait time for PwMHSDs did not vary by insurance type, a finding similar to what was reported in a previous study of PwMHSD ED length of stay in Massachusetts.²⁷ Consistent with other studies, patient-level factors associated with ED wait time

Figure 2
Adjusted average ED wait times for PwMHSDs by insurance type

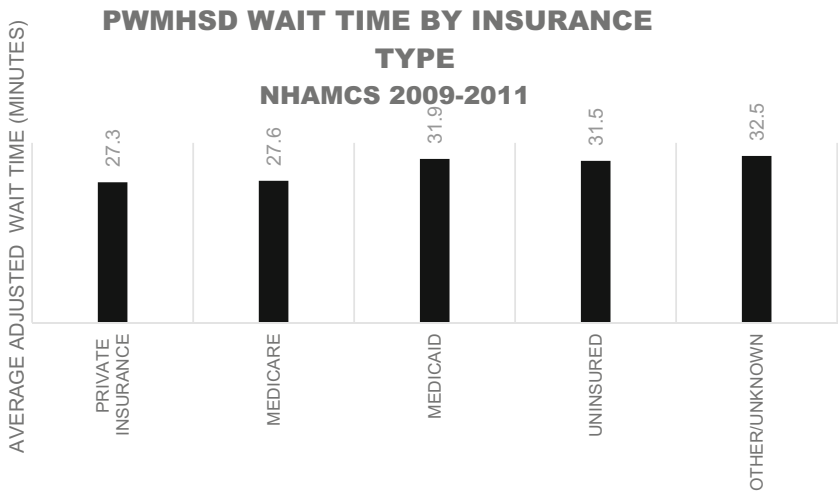
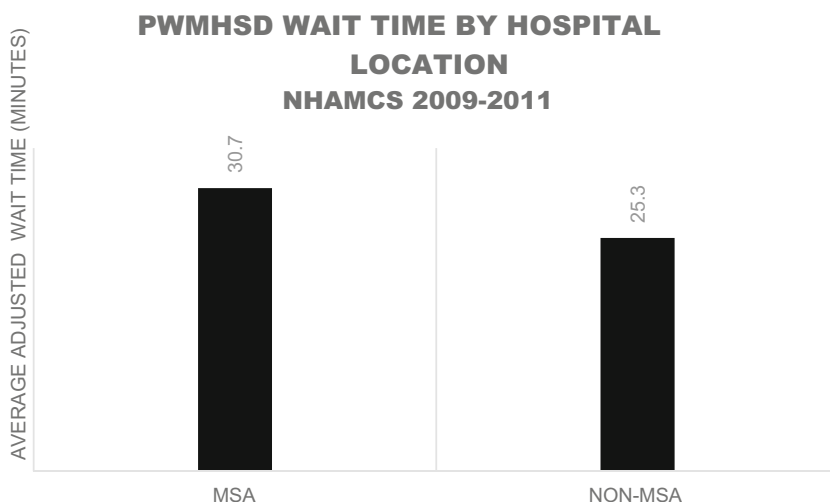


Figure 3
Adjusted average ED wait times for PwMHSDs by hospital location



included gender,³⁰ triage level,³⁰ arrival to ED by ambulance,³¹ and mental health condition.²⁶ For profit, EDs were found to have shorter wait time as reported elsewhere.³⁰

The finding of racial disparities in ED wait time corroborates findings from several other studies that have documented racial and ethnic variations in ED wait time in the general population and for other conditions. In two such studies, Park et al.³² and James et al.³³ observed longer ED wait time for non-Hispanic Blacks and Hispanics in the pediatric population. Similarly, Wilper et al.³⁰ in a longitudinal evaluation of ED wait time between 1997 and 2004 reported associations between race/ethnicity and ED wait time among adult patients, a finding supported by several other studies.^{34–37}

It is possible that non-Hispanic Blacks may experience longer wait time simply as a function of where they seek care. However, while non-Hispanic Blacks may disproportionately live in densely populated geographic locations, where ED are typically overcrowded, the observed racial disparities persisted even after controlling for ED characteristics, such as location (rural/urban and regional location) and ownership. Similarly, the existing evidence suggests that minority groups and populations with lower socioeconomic status may be more likely to utilize the ED for non-emergent care, due to the lack of insurance and/or a regular source of care.³⁸ As such, it is also possible that the longer ED wait time observed for non-Hispanic Black PwMHSDs is a reflection of the non-emergent nature of their visits. However, even after adjusting for the triage classification level of each visit, racial differences persisted, suggesting that the observed racial disparities may be due to other latent factors influencing the provider-patient interaction, such as provider bias.³³ Implicit provider bias has been identified as a potential cause for disparities in health care access and outcomes.³⁹

Undoubtedly, there is the need to implement effective interventions to minimize wait time and overall ED visit duration for PwMHSDs. Worldwide, hospitals are undertaking several efforts to minimize ED overcrowding and wait time. Such efforts have included interventions involving the application of lean and six sigma management principles,⁴⁰ the use of analytics to predict demand,⁴¹ refinements to the triage process,^{42, 43} the implementation of a fast-track system,⁴⁴ and the development and use of ambulatory care pathways for non-emergent cases.⁴⁵ There is evidence to suggest that when effectively implemented, these interventions can significantly reduce wait

time^{41, 43} and improve overall patient satisfaction.⁴⁴ Specific strategies for reducing ED visit duration for PwMHSDs that have demonstrated success have included the development and use of a dedicated psychiatric emergency service unit²⁴ and the implementation of an ED-psychiatry co-management model with contracted psychiatry consultation services.⁴⁶ The Joint Commission⁴⁷ has recommended other community-based approaches to minimize ED visit duration for PwMHSDs, including the expansion of community crises centers; the strengthening of partnership with law enforcement and other health and human services agencies; and the implementation of “health homes”, which integrate primary, acute, behavioral health, and long-term care for these patients.

However, in addition to these operational improvement interventions, specific strategies are needed to eliminate racial disparities in the ED experiences of patients. The findings from this study and other studies suggest that widespread racial inequities exist with respect to ED wait time, which requires urgent corrective community-based and culturally competent interventions. There is evidence to suggest that interventions aimed at targeting the attitudes and behavioral intentions of health care providers and facilitating a reflection on providers’ implicit bias may be an effective approach.⁴⁸ In addition, an increased focus on cultural competency is needed in the curricula of health profession training programs. Increasing clinician conduct with diverse populations, including minorities and PwMHSDs, during training may also improve the cultural competency of health professionals.⁴⁹ Systemic racial disparities in health care may also be improved with an increase in the diversity of the health care and behavioral health workforce.⁵⁰

There are few noteworthy limitations of this study. First, the study is a pooled cross-sectional analysis and as such can by no means establish causality. Due to data limitations, the study was unable to account for additional potential confounding factors, such as socioeconomic status. In addition, because data was collected by hospital staff, it is possible that variations may exist in how data on the variables of interest were collected across EDs. However, to minimize inconsistencies in data collection, the NCHS provides training to hospital staff. Fourth, due to data limitations, the study did not account for patient-level clustering in the data. Analyses, however, adjusted for past visits made by PwMHSDs and accounted for the clustering of visits within EDs. Despite the above-mentioned limitations, the findings of this study adds to the literature on racial disparities and calls for additional research to shed more light on the mechanism through which such observed disparities arise.

Implications for Behavioral Health

Research is needed to comprehensively characterize racial differences in ED wait times and to identify effective culturally sensitive interventions aimed at eliminating racial disparities in ED wait time for PwMHSDs. For example, to what extent are observed racial differences attributable to ED processes (including triage processes) versus implicit bias? Additional research is also needed to identify effective operational improvement strategies for improving ED throughput, specifically for PwMHSDs, and consequently reducing ED wait time for this group of patients. Effective strategies would involve the timely screening of patients requiring psychiatric and behavioral intervention and collaborative partnerships between EDs and community-based behavioral health care and social services organizations.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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