Increasing Emergency Department Visits for Mental Health Conditions in the United States

Kayla M. Theriault, MPH[a]; Robert A. Rosenheck, MD[b,c]; and Taeho Greg Rhee, PhD, MSW[a,b,c,*]

ABSTRACT

Objective: The Affordable Care Act (ACA) of 2010 was fully implemented in 2014, expanding access to outpatient mental health services and potentially reducing reliance on emergency (ED) services. This study examined trends and correlates of ED visits for mental health conditions from 2007 to 2016, with attention to changes in ED use after 2014.

Methods: Nationally representative samples of ED visits in the United States were assessed using a repeated cross-sectional analysis of National Hospital Ambulatory Medical Care Survey data. This study used diagnoses associated with each ED visit to identify changes in proportions in mental health diagnostic categories (psychiatric diagnoses only, substance use–related diagnoses only, or both, based on *ICD-9-CM* or *ICD-10-CM* criteria). These trends were further examined by age, sex, race/ethnicity, and insurance status. The statistical significance of temporal patterns was evaluated with multivariate logistic regression analyses.

Results: Between 2007 and 2016, about 8.4 million (8.3%) of 100.9 million ED visits nationwide were for psychiatric or substance use–related diagnoses. Over the 10-year study period, the proportion of ED visits for mental health diagnoses increased from 6.6% to 10.9% ($P < .001$). Visits for alcohol and "other" substance use and psychiatric diagnoses classified as "other" accounted for an increasing portion of mental health–related ED visits during this time ($P < .001$). ED visits in which Medicaid was the primary source of insurance coverage showed the largest increase, nearly doubling from 27.2% in 2007–2008 to 42.8% in 2015–2016 (adjusted odds ratio for linear trends = 1.71; 95% CI, 1.36–2.15).

Conclusions: ED utilization for mental health conditions—and especially substance use conditions—significantly increased in the last decade. The increasing use of EDs by patients with mental health conditions may indicate suboptimal delivery of effective or acceptable outpatient mental health care, particularly for substance use–related conditions.

J Clin Psychiatry 2020;81(5):20m13241

To cite: Theriault KM, Rosenheck RA, Rhee TG. Increasing emergency department visits for mental health conditions in the United States. *J Clin Psychiatry*. 2020;81(5):20m13241.

To share: https://doi.org/10.4088/JCP.20m13241

[a]Department of Public Health Sciences, School of Medicine, University of Connecticut, Farmington, Connecticut

[b]Department of Psychiatry, School of Medicine, Yale University, New Haven, Connecticut

[c]Mental Illness Research, Education and Clinical Center of New England, US Department of Veterans Affairs Connecticut Healthcare System, West Haven, Connecticut

**Corresponding author:* Taeho Greg Rhee, PhD, MSW, School of Medicine, University of Connecticut, 263 Farmington Ave, Farmington, CT 06030 (rhee@uchc.edu; tgrhee.research@gmail.com).

About 1 in 5 US adults (46.6 million) experiences some form of mental, behavioral, or emotional disorders annually.[1,2] With a steadily increasing suicide rate in the United States, and a raging opioid epidemic, behavioral health remains one of most important public health issues.[3–6] In 2017 alone, 57.4% of adults with any mental illness reported that they did not receive any mental health treatment in the past year.[2,7] Despite the high prevalence, previous studies[8–10] suggest that many adults find it difficult to seek the outpatient mental health treatment in the United States and may turn to emergency departments (EDs) instead.

Treatment of mental disorders in EDs, usually regarded as a provider of last resort, may be a suboptimal approach to mental health care. The limited time, lack of trained providers, and limited privacy in ED settings make it difficult to conduct thorough and supportive psychiatric assessments and to provide patients with optimal, empathic care,[11] better provided in clinics offering longer-term continuity of care. Many ED providers lack training and experience in handling serious psychiatric or addiction problems.[11,12]

By the beginning in 2014, the Affordable Care Act (ACA) of 2010 was fully implemented, expanding mental health insurance coverage in the United States.[13] A recent study[14] suggested that this implementation has been beneficial for those with mental health disorders, as it reported declining rates of being uninsured and experiencing unmet needs for mental health care. States that chose to expand Medicaid under the ACA were expected to have a greater ability to meet the mental health care needs of their residents,[15] although not all states have chosen to take part.[15] Use of ED services for mental health conditions may thus decrease due to expanded ACA-related coverage.

Data on the magnitude of ED use are needed to plan future mental health policies. If ED use for mental health conditions continues to grow, it will require (*a*) improvements in ED infrastructure to better staff them to care for patients with mental health conditions and/or (*b*) an expansion of support for community mental health services and improved referral processes to more appropriate treatment settings. It is also important to understand which mental health conditions are most increasingly treated in the ED settings.

Previous research[16] showed that ED visits related to mental health conditions increased from 4.9% in 1992 to 6.3% in 2001. Another study[17] reported a 15% increase in mental health–related ED visits between 1992 and 2000. Associations have also been found between specific patient characteristics and increased ED use for mental health conditions. For example, one study[17] found non-Hispanic black/African American individuals and Medicaid beneficiaries were more likely to use

Clinical Points

- Between 2007 and 2016, the proportion of emergency department (ED) visits for mental health diagnoses increased from 6.6% to 10.9%.
- Visits for alcohol and "other" substance use and "other" psychiatric conditions accounted for an increasing portion of mental health–related ED visits.
- Despite the policy efforts to address gaps in mental health care in the past decade, use of EDs increased over time.

mental health–related ED services than white individuals or those with private insurance. Another study,[16] however, reported that mental health–related ED visits increased significantly among non-Hispanic white individuals and those older than 70 years.

Most studies of mental health ED use are by now outdated as they used data from years prior to the full implementation of the ACA.[16,17] Although one recent study[18] reported a 28% increase in pediatric ED visits for mental health conditions from 2011 to 2015, these findings cannot be generalized to the larger adult population. Another study[19] similarly found that mental health–related ED visits increased by 16.5% between 2006 and 2011, but these data are now almost a decade out of date, and this study was unable to examine the most recent post-ACA trends or provide data on ED use by type of mental health conditions.

We investigated recent rates, trends, and correlates of ED visits for mental health diagnoses from 2007 to 2016 using a nationally representative sample of ED visits from the National Hospital Ambulatory Medical Care Survey (NHAMCS). We sought to answer three questions: (1) What are the proportions, and trends in ED visits for mental health conditions generally? (2) Do these rates and trends vary for different groups of mental health diagnoses? And finally, (3) Does the proportion of certain demographic groups (eg, those covered by Medicaid) decrease among users of ED services, reflecting increased access to outpatient care for such people under the ACA, and do any groups have increased use of mental health–related ED service use? In addition, are there other sociodemographic factors that are independently associated with mental health–related ED service use? Of the three primary questions, the first two were descriptive or exploratory in nature, and as for the last one, we hypothesized that the proportion of Medicaid beneficiaries using mental health–related ED services may have decreased because they have better access to outpatient mental health care, thereby reducing their need for ED services.

METHODS

Data Source and Sampling Design

This study is based on 2007–2016 NHAMCS data. The NHAMCS is a publicly available dataset provided by the National Center for Health Statistics of the Centers for Disease Control and Prevention. NHAMCS sampled non–federally employed health care providers (primarily physicians) who are engaged in direct patient care in ED settings.[20] The data source serves as an important tracking tool on emergency care utilization regarding national trends and practice patterns in the United States.[21]

The NHAMCS utilizes a complex survey design and sampling weights (ie, unequal probability of selection, clustering, and stratification), employing a 3-stage probability sampling design.[22] First, a nationally representative sample of geographically defined areas, also known as primary sampling units (PSUs), were selected. In the second stage, samples of hospitals with ED and emergency service areas were selected from the PSUs. Finally, a sample of practicing health care providers within the sampling units from the second stage was drawn. A systematic random sampling of patients to ED visits was then collected. The samples were limited to adults aged 19 years or older (unweighted n = 220,691). Additional information regarding descriptions, questionnaires, sampling methodology, and datasets is publicly available on the NHAMCS website.[23]

Measures

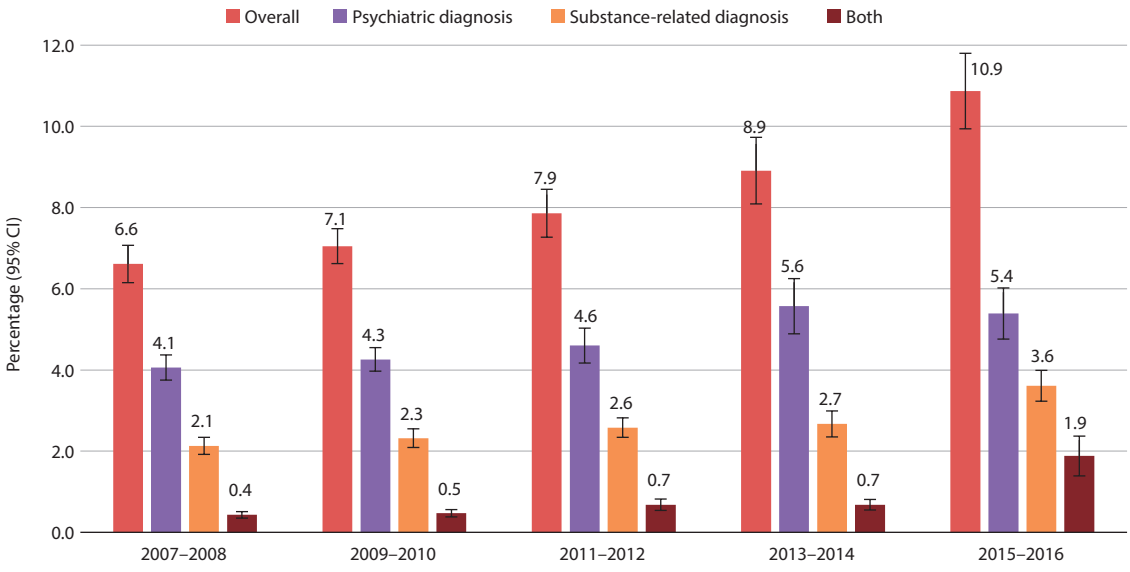
Mental health conditions. Visits related to mental health conditions, which include diagnoses of a psychiatric disorder or a substance use–related disorder, were identified based on up to 3 diagnostic codes given to the patient at the time of the visit. For the years 2007 through 2015, *ICD-9-CM* codes were used in the NHAMCS to indicate diagnoses. For the year 2016, diagnostic codes were based on *ICD-10-CM* codes. Based on the technical reports from the Agency for Healthcare Research and Quality (AHRQ),[24–26] we grouped psychiatric diagnoses into the following groups: (1) mood disorder, (2) anxiety disorder, (3) psychosis or schizophrenia, (4) suicide attempt or ideation, or (5) other/unspecified. For substance use diagnoses, we grouped them into 6 categories: (1) alcohol, (2) amphetamine, (3) cannabis, (4) cocaine, (5) opioid, or (6) other/unspecified. Using these categories, we also determined whether patients had both psychiatric and substance-related diagnoses (dually diagnosed) and whether they were given multiple mental health diagnoses at the time of the ED visit.

Sociodemographic covariates. Covariates were selected based on previous studies of mental health–related visits to the ED using NHAMCS data.[16–20] Covariates included age (19–44, 45–64, or ≥ 65 years), sex, race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, or non-Hispanic other), and insurance coverage (private, Medicare, Medicaid, other, or missing/not reported).

Analysis

We estimated the proportion of ED visits in which mental health diagnoses were documented from 2007 to 2016. We reported the proportion of these ED visits by broad diagnostic category: psychiatric diagnosis only, substance use–related diagnosis only, or both. In addition, we reported rates and trends of 5 psychiatric diagnostic types and 6

Figure 1. Trends of Mental Health–Related Emergency Department Visits Among US Adults, 2007–2016[a]



[a]Data from the National Hospital Ambulatory Medical Care Survey.[21] Whiskers represent 95% confidence intervals.

substance use–related diagnostic types. We reported these estimates both as proportions (%) and per 100,000 ED visits.

To test linear trends over time, we transformed the survey year by subtracting 2007 and dividing the results by 11. The resulting transformed value ranged from 0 for the year 2007 to 1 for the year 2016.[27–29] The odds ratios associated with this transformed variable would represent change in the odds of visits in which mental health diagnoses were documented across the entire study period. We calculated unadjusted and adjusted odds ratios for changing rates and their corresponding 95% confidence intervals (CIs). Covariates included age, sex, and race/ethnicity when estimating the adjusted period association.

We also conducted bivariate analyses of changes within each sociodemographic characteristic for each mental health diagnosis. We used design-based *F* tests (ie, a weight-corrected Pearson's χ^2 statistic) to test differences by mental health diagnosis. In addition, we conducted a stratified analysis of ED visit trends in which mental health diagnoses were documented by each sociodemographic characteristic, including insurance coverage, by stratum. Lastly, we conducted a series of multivariable-adjusted logistic regression analyses to examine factors associated with change in ED visits with mental health conditions.

We used Stata 15.1 MP/6-Core (Stata Corp; College Station, Texas)[30] for all analyses, and we employed the *svy* commands to account for the complex survey sampling design of the NAMCS (ie, unequal probability of selection, clustering, and stratification). This study was exempted from the IRB approval (#2000021850) at Yale University School of Medicine and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.[31]

RESULTS

Characteristics of the Study Sample

Between 2007 and 2016, about 8.4 of 100.9 million ED visits (8.3%) nationwide had psychiatric or substance use–related diagnoses. ED visits in which mental health conditions were diagnosed were more likely to be made by adults who were younger than 45 years (58.5%), male (52.5%), non-Hispanic white (65.2%), and covered by Medicaid or other public insurance types (58.6%) (Supplementary Table 1).

Trends of Mental Health–Related ED Visits

The overall rate of ED visits for any mental health diagnosis increased nearly 2-fold from 6.6% (95% CI, 6.2%–7.1%) in 2007–2008 to 10.9% (95% CI, 9.9%–11.9%) in 2015–2016 ($P < .001$) (Figure 1); psychiatric visits increased from 4.1% (95% CI, 3.8%–4.4%) to 5.4% (95% CI, 4.8%–6.1%) ($P < .001$); and substance use–related visits increased from 2.1% (95% CI, 1.9%–2.4%) to 3.6% (95% CI, 3.3%–4.0%) ($P < .001$). ED visits in which both psychiatric and substance use–related diagnoses were given increased over 4 times from 0.4% (95% CI, 0.4%–0.5%) in 2006–2007 to 1.9% (95% CI, 1.4%–2.5%) ($P < .001$). When comparisons were adjusted for age, sex, and race/ethnicity, linearly increasing trends of mental health–related ED visits were consistently found in all categories ($P < .001$) (Table 1). Finally, ED visits in which 2 or more mental health diagnoses were documented increased from 1.1% in 2007–2008 to 2.8% in 2015–2016 ($P < .001$).

ED Visits by Type of Mental Health Diagnosis

Among psychiatric diagnoses, ED visits with other/unspecified diagnoses (eg, adjustment disorder and personality disorders) increased from 1,040 per 100,000 ED

Table 1. Proportions and Trends of Emergency Department Visits Among US Adults by Mental Health Diagnosis, 2007–2016[a]

Variable	2007–2008	2009–2010	2011–2012	2013–2014	2015–2016	Time Trends					
						Unadjusted Odds Ratio	95% CI	*P*	Adjusted Odds Ratio[b]	95% CI	*P*
Sample size											
Unweighted visits	53,102	52,657	46,807	37,006	31,119						
Weighted visits	18,182,582	19,848,906	20,565,317	20,759,980	21,520,747						
(Row %)	(18.0%)	(19.7%)	(20.4%)	(20.6%)	(21.3%)						
Any mental health diagnosis	6.6	7.1	7.9	8.9	10.9	1.75	1.55–1.97	<.001	1.79	1.58–2.02	<.001
Psychiatric diagnosis only	4.1	4.3	4.6	5.6	5.4	1.42	1.23–1.64	<.001	1.44	1.25–1.67	<.001
Substance-related diagnosis only	2.1	2.3	2.6	2.7	3.6	1.68	1.42–1.99	<.001	1.71	1.45–2.02	<.001
Both psychiatric and substance-related diagnoses	0.4	0.5	0.7	0.7	1.9	5.25	3.32–8.30	<.001	5.43	3.42–8.64	<.001
Monodiagnosis	5.5	5.9	6.3	7.3	8.0	1.54	1.36–1.75	<.001	1.57	1.38–1.78	<.001
Polydiagnoses (≥2)	1.1	1.2	1.6	1.6	2.8	2.62	2.01–3.42	<.001	2.71	2.07–3.55	<.001
Any psychiatric diagnosis	4.5	4.7	5.3	6.2	7.3	1.72	1.49–1.99	<.001	1.76	1.52–2.03	<.001
Any mood disorder	1.5	1.5	1.6	1.7	2.0	1.34	1.10–1.63	.004	1.37	1.13–1.67	.002
Any anxiety disorder	1.4	1.5	1.8	2.1	2.3	1.69	1.45–1.98	<.001	1.71	1.47–2.00	<.001
Any psychosis/ schizophrenia	0.8	0.7	0.8	0.7	0.7	0.95	0.78–1.25	.728	0.95	0.73–1.24	.729
Any suicide attempt or ideation	0.5	0.5	0.5	0.5	0.3	0.82	0.65–1.04	.097	0.84	0.66–1.06	.150
Other psychiatric disorder	1.0	1.2	1.4	2.1	3.0	3.23	2.33–4.47	<.001	3.34	2.40–4.64	<.001
Any substance-related diagnosis	2.6	2.8	3.3	3.3	5.5	2.20	1.84–2.62	<.001	2.26	1.89–2.69	<.001
Alcohol-related	1.7	1.9	2.1	2.1	3.0	1.77	1.46–2.15	<.001	1.79	1.49–2.16	<.001
Opioid-related	0.2	0.2	0.3	0.3	0.4	1.90	1.40–2.58	<.001	1.97	1.45–2.70	<.001
Amphetamine-related	0.1	0.0	0.1	0.1	0.2	4.49	2.47–8.16	<.001	4.71	2.60–8.54	<.001
Cannabis-related	0.1	0.1	0.1	0.1	0.1	1.49	0.81–2.74	.196	1.59	0.86–2.92	.138
Cocaine-related	0.2	0.1	0.2	0.1	0.1	0.67	0.40–1.12	.125	0.66	0.40–1.07	.089
Hallucinogen-related	0.01	0.00	0.01	0.02	0.03	5.70	0.75–43.02	.091	5.83	0.76–45.01	.091
Other/unspecified substances	0.6	0.6	0.8	0.8	1.9	3.66	2.44–5.49	<.001	3.82	2.53–5.75	<.001

[a]Data from the National Hospital Ambulatory Medical Care Survey.[21] Rows represent the proportion (%) of emergency department visits in which individual mental health diagnoses were made.
[b]Adjusted for age, sex, and race/ethnicity.

visits in 2007–2008 to 2,961 per 100,000 ED visits in 100,000 ED visits (adjusted odds ratio [AOR] for linear trends = 3.34; 95% CI, 2.40–4.64) (Figure 2A and Table 1). ED visits in which mood disorders and anxiety disorders were identified also increased over time ($P = .002$ for mood disorder and $P < .001$ for anxiety disorders). ED visits in which psychosis/schizophrenia and suicide attempt/ideation were identified did not show significant change.

Turning to substance use–related ED visits, we found that alcohol-related ED visits were most common, increasing from 1,669 per 100,000 ED visits in 2007–2008 to 3,007 per 100,000 ED visits in 2015–2016 (AOR for linear trends = 1.79; 95% CI, 1.49–2.16). We found that amphetamine- and opioid-related ED visits also increased at least 2-fold ($P < .001$). Finally, other/unspecified substance–related ED visits also increased from 562 per 100,000 ED visits in 2007–2008 to 1,882 per 100,000 ED visits in 2015–2016 ($P < .001$).

Stratified Analysis of Mental Health–Related ED Visits by Sociodemographic Characteristic

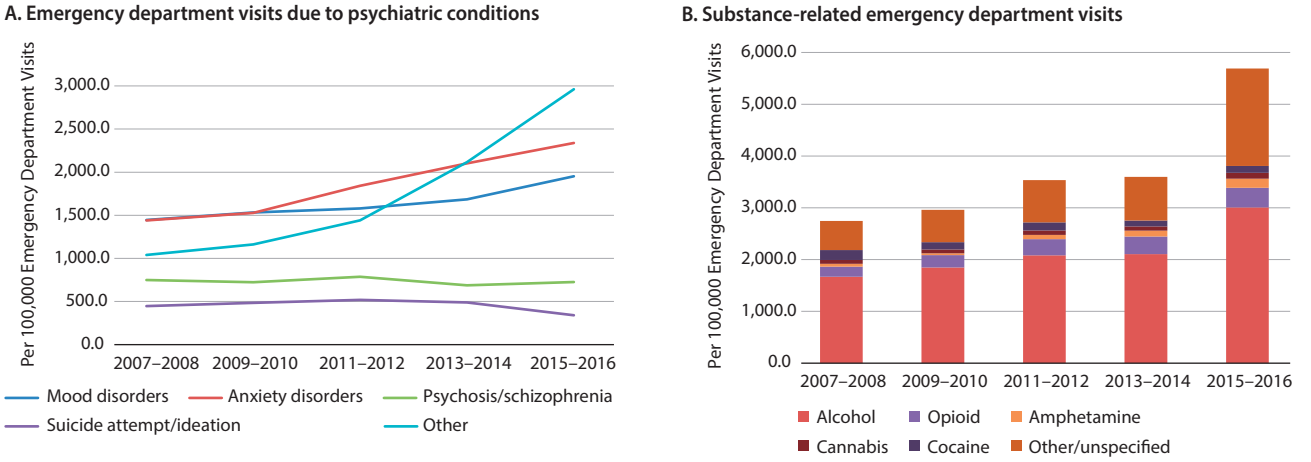
Table 2 presents a stratified analysis of mental health–related ED visits by sociodemographic characteristic. We did not find any trends by age, sex, or race/ethnicity. Among ED visits in which Medicaid was identified as the primary source of insurance, the rate of mental health–related ED visits nearly doubled from 27.2% in 2007–2008 to 42.8% in 2015–2016 (AOR for linear trends = 1.71; 95% CI, 1.36–2.15). Among ED visits in which other public insurance types were the primary source of insurance coverage, the proportion of mental health–related ED visits decreased from 34.6% in 2007–2008 to 22.1% in 2015–2016 (AOR for linear trends = 0.51; 95% CI, 0.38–0.68).

Factors Associated With Mental Health–Related ED Visits

Analyses that examined factors associated with ED visits by type (Table 3) showed that greater age was associated with a lower likelihood of ED use for psychiatric diagnoses only ($P < .001$). Compared to non-Hispanic whites, non-Hispanic black and Hispanic adults were less likely to make ED visits for psychiatric diagnoses only ($P < .001$). In addition, non-private insurance types (eg, Medicare and Medicaid) were all associated with a higher likelihood of ED visits for psychiatric diagnoses only ($P < .001$).

In the model identifying factors associated with ED visits in which substance use–related diagnoses only were

Figure 2. Trends of Emergency Department Visits by Mental Health Diagnosis in US Adults, 2007–2016[a]



[a]Data from the National Hospital Ambulatory Medical Care Survey.[21]

Table 2. Demographic Trends of Emergency Department Visits in Which Any Mental Health Diagnosis Was Listed Among US Adults, 2007–2016[a]

						Time Trends					
Variable	2007–2008	2009–2010	2011–2012	2013–2014	2015–2016	Unadjusted Odds Ratio	95% CI	*P*	Adjusted Odds Ratio[b]	95% CI	*P*
Sample size											
Unweighted visits	4,535	4,352	4,348	3,838	3,558						
Weighted visits	1,202,095	1,399,758	1,615,915	1,849,698	2,339,444						
(Row %)	(14.3%)	(16.7%)	(19.2%)	(22.0%)	(27.8%)						
Age, y											
19–44	58.2	56.7	61.2	57.7	58.6	1.02	0.90–1.16	.733	1.02	0.91–1.16	.702
45–64	32.7	35.7	32.1	34.2	31.6	0.92	0.82–1.04	.180	0.92	0.81–1.03	.157
≥65	9.2	7.7	6.8	8.1	9.9	1.19	0.91–1.55	.204	1.19	0.92–1.55	.182
Sex											
Male	51.1	51.5	53.8	54.6	51.1	1.02	0.89–1.18	.763	1.02	0.89–1.18	.738
Female	48.9	48.5	46.2	45.4	48.9	0.98	0.85–1.13	.763	0.98	0.85–1.12	.738
Race/ethnicity											
Non-Hispanic white	64.3	64.9	65.4	65.8	65.1	1.04	0.80–1.34	.793	1.04	0.80–1.35	.779
Non-Hispanic black	19.6	19.6	18.9	19.2	20.5	1.05	0.77–1.44	.759	1.05	0.76–1.44	.766
Hispanic	12.4	12.3	12.8	11.7	11.6	0.91	0.65–1.28	.600	0.91	0.65–1.28	.586
Non-Hispanic other	3.7	3.2	2.9	3.3	2.9	0.82	0.48–1.41	.470	0.82	0.48–1.41	.471
Insurance coverage											
Any	90.8	93.6	90.4	90.6	87.8	0.62	0.36–1.06	.082	0.62	0.36–1.06	.083
Private	25.3	22.5	22.2	24.5	22.5	0.88	0.73–1.06	.188	0.88	0.73–1.07	.199
Medicare	12.9	11.3	10.5	11.6	12.7	0.99	0.80–1.23	.911	0.93	0.94–1.16	.510
Medicaid	27.2	31.1	32.4	32.5	42.8	1.69	1.35–2.12	<.001	1.71	1.36–2.15	<.001
Other	34.6	35.2	34.9	31.4	22.1	0.52	0.40–0.69	<.001	0.51	0.38–0.68	<.001
Missing/not reported	9.2	6.4	9.6	9.4	12.2	1.62	0.94–2.79	.082	1.62	0.94–2.80	.083

[a]Data from the National Hospital Ambulatory Medical Care Survey.[21] Rows represent the proportion (%) of emergency department visits in which individual mental health diagnoses were made.
[b]Adjusted for age, sex, and race/ethnicity.

documented, middle-aged adults (ie, those aged 45–64 years) had a greater likelihood (AOR = 1.36; 95% CI, 1.26–1.47) and older adults (aged ≥65 years) had a lower likelihood (AOR = 0.39; 95% CI, 0.33–0.46) of ED visits. Being male was associated with a greater likelihood of ED use (AOR = 2.75; 95% CI, 2.54–2.98). Non-Hispanic black adults were less likely to encounter the ED visits than non-Hispanic white adults ($P < .001$). Those with undocumented or missing insurance information were more likely to encounter the ED visits than those with private health insurance ($P < .001$).

Factors associated with ED visits in which both psychiatric and substance use–related diagnoses were documented showed similar trends to those with psychiatric diagnoses only. One exception was sex. Male adults were more likely to encounter the ED visits than female adults (AOR = 1.88; 95% CI, 1.57–2.25).

DISCUSSION

Nationally representative data from the NHAMCS suggest that the proportion of ED visits in which mental

Table 3. Multivariable-Adjusted Factors Associated With Emergency Department Visits by Mental Health Diagnosis Among US Adults, 2007–2016[a]

	Psychiatric Diagnosis Only			Substance-Related Diagnosis Only			Both		
Factor[b]	AOR	95% CI	*P*	AOR	95% CI	*P*	AOR	95% CI	*P*
Survey year (2007–2008)									
2009–2010	1.03	0.93–1.15	.567	1.07	0.94–1.23	.297	1.07	0.83–1.38	.586
2011–2012	1.12	0.98–1.27	.095	1.19	1.04–1.36	.014	1.57	1.17–2.12	.003
2013–2014	1.37	1.17–1.60	<.001	1.24	1.05–1.47	.013	1.57	1.18–2.09	.002
2015–2016	1.29	1.11–1.49	.001	1.67	1.43–1.95	<.001	4.37	3.06–6.25	<.001
Age, y (19–44)									
45–64	0.87	0.81–0.93	<.001	1.36	1.26–1.47	<.001	0.73	0.62–0.85	<.001
≥65	0.33	0.29–0.38	<.001	0.39	0.33–0.46	<.001	0.07	0.04–0.12	<.001
Sex (female)									
Male	1.03	0.97–1.09	.356	2.75	2.54–2.98	<.001	1.88	1.57–2.25	<.001
Race/ethnicity (non-Hispanic white)									
Non-Hispanic black	0.77	0.70–0.85	<.001	0.71	0.63–0.80	<.001	0.65	0.51–0.83	<.001
Hispanic	0.74	0.67–0.82	<.001	0.93	0.82–1.06	.277	0.68	0.53–0.87	.002
Non-Hispanic other	0.85	0.71–1.01	.061	1.29	1.02–1.62	.034	0.68	0.46–1.01	.058
Insurance coverage (private)									
Medicare	1.65	1.45–1.87	<.001	1.07	0.94–1.23	.297	1.61	1.15–2.27	.006
Medicaid	1.76	1.61–1.91	<.001	1.19	1.04–1.36	.014	2.13	1.64–2.77	<.001
Other	1.29	1.18–1.42	<.001	1.24	1.05–1.47	.013	1.57	1.18–2.09	.002
Missing/not reported	1.54	1.27–1.87	<.001	1.67	1.43–1.95	<.001	4.37	3.06–6.25	<.001

[a]Data from the National Hospital Ambulatory Medical Care Survey.[21]
[b]Reference variable shown in parentheses.
Abbreviation: AOR = adjusted odds ratio.

health conditions were documented nearly doubled between 2007 and 2016, including both psychiatric and substance-related diagnoses and dual diagnoses. In the same study period, almost a 3-fold increase was observed in the proportion of ED visits in which 2 or more mental health diagnoses were documented. When stratified by demographic characteristics, the proportion of mental health–related ED visits by patients with coverage primarily by Medicaid showed an especially robust increase, contrary to our hypothesis that ED visits would decline with expanded mental health coverage. At the same time, the proportion of ED visits among those with "other" types of insurance than Medicare and Medicaid decreased substantially.

The past decade saw the implementation of both the Mental Health Parity and Addiction Equity Act (MHPAEA) of 2008—the federal law requiring parity of mental health benefits with medical or surgical benefits—and the ACA of 2010, which further extended the parity requirements of the MHPAEA and expanded mental health coverage options (specifically Medicaid).[32,33] This expansion in mental health coverage covered both outpatient clinic visits and ED visits. However, evidence suggests that while coverage for increased access to mental health care expanded,[34] treatment rates remain low in the post-ACA era, perhaps reflecting limited supply of providers willing to accept low reimbursement rates.[35–38] Thus, the increase in the proportion of ED visits for mental health–related diagnoses may have resulted from the combination of increased coverage and limited supply of affordable outpatient services, resulting in increased use of ED services as a last resort. It is also possible that newly covered patients may prefer ED to outpatient services. Support for this possibility is found in the Veterans Administration system, in which reimbursement is not an issue and increased use of outpatient mental health services is associated with increased rather than deceased ED use.[39] Another possible explanation is the lower barrier to accessing care in EDs, as they are open at all hours and do not require booking appointments, and in a major crisis, transportation is provided by ambulances or even the police.

While the increasing suicide rate is a major public health concern in the United States,[3–6] we did not find any significant change in ED visit encounters related to suicide attempts or ideation. It may be that while suicide deaths are well documented as a cause in death certificates,[40,41] documentation of suicide attempts or ideation may be less complete in ED settings. A further validation study is needed to determine whether ED visits for suicide attempts or ideation are well documented in ED settings. It is also possible that suicidal adults, especially those with substance use disorders, may not seek ED care.

We also noted that the proportion of substance use–related ED visits doubled, showing an increase similar to that of other mental health diagnoses, even in the face of an accelerating opioid epidemic. For alcohol-related ED visits, this finding may reflect, in part, an increase in alcohol consumption in the United States from 2.28 gallons consumed per person in 2006 to 2.35 gallons per person in 2016.[42] In general, it may also be that access to mental health care in the past decade had minimal impacts on expanding addiction-related and specifically opioid-related services.[35,43] Because the United States faces an opioid epidemic,[37,44] along with escalating overdose mortality rates from other illicit drugs (eg, methamphetamine, fentanyl),[45,46] identifying and treating patients with substance use could be expected to increase in ED settings more than other conditions. In addition, an increasing proportion of ED visits had

"other/unspecified" substance–related diagnoses, possibly reflecting the fact that some patient took substances without knowing the exact substances that they were taking or that patients simply took multiple substances, making it difficult for health care providers to diagnose specific substance use disorders. Because polysubstance use is increasingly common,[46] identifying exact substance use disorders may have been difficult.

Another important observation was that ED visits in which Medicaid was the primary source of coverage increased over time. While we hypothesized that ED use might decline among the increasing numbers of patients covered by Medicaid, the opposite appears to have been the case with Medicaid beneficiaries. This finding is consistent with a previous study[26] showing increased mental health use covered by Medicaid. This increase is likely due at least in part to Medicaid expansion under the ACA in many states. We could not conduct state-level analyses because a state-level identifier was not available in the data set we used. Yet, because more patients with Medicaid used ED services for mental health conditions, further research is needed on why Medicaid beneficiaries with mental health conditions, and presumably increased access to outpatient services, are especially more likely to use ED services over time. It may be that there is an unrecognized preference for walk-in, "just-in-time" mental health services that deserves further study. For example, it may take several weeks to see a mental health care provider, and thus, booking appointments may not be ideal for some patients, resulting in increased use of ED services instead.

There are several implications from findings of the study. First, the increasing trends of mental health–related ED visits may result in overcrowded EDs[47] and suboptimal provision of mental health services in EDs. Although insurance coverage for mental health care has expanded over the past decade, ED use has increased, perhaps indicating continued poor access to outpatient mental health services or a preference for ED-based walk-in services. Second, because one size does not fit all, policy strategies are needed to assure that diagnosis-specific treatment is available in all ED settings (eg, buprenorphine for opioid use disorder). For instance, while Medicaid has been the dominant source of funding for those with psychiatric conditions, its role has been modest in addiction services.[48] A diversity of care that meets the needs of patients with diverse addiction-related needs is needed.

Third, health care providers working in ED settings may need to be better trained to treat diverse mental health conditions. They will need to recognize and implement different screening tests, brief treatment modalities, and referral to treatment strategies to better serve patients with mental health conditions.[49] In addition, health care providers should also be aware that ED patients presenting with comorbid psychiatric and substance use–related conditions (ie, the dually diagnosed) are increasingly common. Such patients are especially likely to face complicating legal and psychosocial issues.[46,50] Lastly, active care coordination (eg, psychiatric or addiction specialty walk-in for services) should be encouraged to serve patients with mental health conditions in EDs, and Medicare and Medicaid payment incentives should consider alternative reimbursement models of mental health care in ED settings, as these may benefit Medicaid beneficiaries with access to care and treatment of mental health conditions.

Several limitations deserve comment. First, data on concomitant use of outpatient mental health services are not available in NHAMCS data, and while a long line of studies have failed to show that increased use of outpatient services leads to deceased use of ED services, this idea deserves continued study.[39] Second, available data do not provide full patient histories (eg, duration, severity, and treatment of individual mental health conditions, and frequency of past ED visits). Third, mental health diagnoses may not be accurate due in part to human errors or to documentation or confirmation biases.[16,50] Future research would benefit from addressing these potential limitations.

Despite these limitations, strengths of the study include (1) the use of the most recent, nationally representative data; (2) subgroup analysis by type of mental health conditions; and (3) stratified analysis by sociodemographic characteristics. This study highlights the continuing increase in use of EDs by patients with mental health conditions, suggesting gaps in effective or acceptable mental health care—particularly for substance use–related conditions.

Submitted: January 7, 2020; accepted March 20, 2020.

Published online: July 28, 2020.

Author contributions: Study concept and design: all authors; data acquisition and statistical analyses: Ms Theriault and Dr Rhee; interpretation of data: all authors; drafting of manuscript: Ms Theriault and Dr Rhee; critical revision of manuscript for important intellectual content: all authors.

Potential conflicts of interest: In the past 3 years, **Dr Rhee** was supported in part by the National Institute on Aging (#T32AG019134) and American Foundation for Suicide Prevention. **Ms Theriault** and **Dr Rosenheck** have no potential conflicts of interest relevant to the subject of this article.

Funding/support: None.

Supplementary material: Available at Psychiatrist.com.

REFERENCES

1. Mental illness. National Institute of Mental Health website. https://www.nimh.nih.gov/health/statistics/mental-illness.shtml. 2019. Accessed December 19, 2019.
2. Mental health by the numbers. National Alliance on Mental Illness website. https://www.nami.org/mhstats. 2019. Accessed December 19, 2019.
3. Bastiampillai T, Sharfstein SS, Allison S. Increase in US suicide rates and the critical decline in psychiatric beds. *JAMA*. 2016;316(24):2591–2592.
4. Hedegaard H, Curtin SC, Warner M. Suicide mortality in the United States, 1999–2017. *NCHS Data Brief*. 2018;(330):1–8.
5. Suicide rising across the US. Centers for Disease Control and Prevention website. https://www.cdc.gov/vitalsigns/suicide/. 2018. Accessed December 19, 2019.
6. Suicide: Prevention strategies. Centers for Disease Control and Prevention website. https://www.cdc.gov/violenceprevention/suicide/prevention.html. 2019. Accessed October 1, 2019.
7. Bose J, Hedden SL, Lipari RN, et al. Key substance use and mental health indicators in the United States: Results from the 2017 National Survey on Drug Use and Health. Substance Abuse and Mental Health Services Administration website. https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHFFR2017/NSDUHFFR2017.htm. 2018. Accessed December 19, 2019.
8. Mojtabai R, Olfson M, Sampson NA, et al. Barriers to mental health treatment: results from the National Comorbidity Survey

Replication. *Psychol Med*. 2011;41(8):1751–1761.
9. Priester MA, Browne T, Iachini A, et al. Treatment access barriers and disparities among individuals with co-occurring mental health and substance use disorders: an integrative literature review. *J Subst Abuse Treat*. 2016;61:47–59.
10. Dockery L, Jeffery D, Schauman O, et al; MIRIAD study group. Stigma- and non-stigma-related treatment barriers to mental healthcare reported by service users and caregivers. *Psychiatry Res*. 2015;228(3):612–619.
11. Shattell MM, Andes M. Treatment of persons with mental illness and substance use disorders in medical emergency departments in the United States. *Issues Ment Health Nurs*. 2011;32(2):140–141.
12. Owens PL, Mutter R, Stocks C. *Mental Health and Substance Abuse-Related Emergency Department Visits among Adults, 2007: Statistical Brief #92. Healthcare Cost and Utilization Project (HCUP)*. Rockville, MD: Statistical Briefs; 2006.
13. Beronio K, Po R, Skopec L, et al. ASPE Research Brief: Affordable Care Act will expand mental health and substance use disorder benefits and parity protections for 62 million Americans. US Department of Health &Human Services, Office of the Assistant Secretary for Planning and Evaluation website. https://aspe.hhs.gov/system/files/pdf/76591/rb_mental.pdf. 2013. Accessed December 19, 2019.
14. Thomas KC, Shartzer A, Kurth NK, et al. Impact of ACA health reforms for people with mental health conditions. *Psychiatr Serv*. 2018;69(2):231–234.
15. Dey J, Rosenoff E, West K. ASPE Issue Brief: Benefits of Medicaid expansion for behavioral health. US Department of Health & Human Services, Office of the Assistant Secretary for Planning and Evaluation website. https://aspe.hhs.gov/system/files/pdf/190506/BHMedicaidExpansion.pdf. 2016. Accessed December 19, 2019.
16. Larkin GL, Claassen CA, Emond JA, et al. Trends in US emergency department visits for mental health conditions, 1992 to 2001. *Psychiatr Serv*. 2005;56(6):671–677.
17. Hazlett SB, McCarthy ML, Londner MS, et al. Epidemiology of adult psychiatric visits to US emergency departments. *Acad Emerg Med*. 2004;11(2):193–195.
18. Kalb LG, Stapp EK, Ballard ED, et al. Trends in psychiatric emergency department visits among youth and young adults in the US. *Pediatrics*. 2019;143(4):e20182192.
19. Capp R, Hardy R, Lindrooth R, et al. National trends in emergency department visits by adults with mental health disorders. *J Emerg Med*. 2016;51(2):131–135.e1.
20. Vijay A, Rhee TG, Ross JS. US prescribing trends of fentanyl, opioids, and other pain medications in outpatient and emergency department visits from 2006 to 2015. *Prev Med*. 2019;123:123–129.
21. Ambulatory Health Care Data. National Center for Health Statistics website. https://www.cdc.gov/nchs/ahcd/index.htm. 2019. Accessed December 19, 2019.
22. Ambulatory health care data: Survey methods and analytic guidelines. National Center for Health Statistics of Centers for Disease Control and Prevention website. https://www.cdc.gov/nchs/ahcd/survey_methods.htm. 2019. Accessed December 19, 2019.
23. Ambulatory health care data: Questionnaires, datasets, and related documentation. National Center for Health Statistics of Centers for Disease Control and Prevention website. https://www.cdc.gov/nchs/ahcd/ahcd_questionnaires.htm. 2019. Accessed September 25, 2019.
24. Heslin KC, Elixhauser A, Steiner CA. *Hospitalizations Involving Mental and Substance Use Disorders Among Adults, 2012: Statistical Brief #191. Healthcare Cost and Utilization Project (HCUP)*. Rockville, MD: Statistical Briefs; 2015.
25. Clinical Classifications Software (CCS) for *ICD-9-CM*. Agency for Healthcare Research and Quality website. https://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp. 2017. Accessed December 22, 2019.
26. Weiss AJ, Barrett ML, Heslin KC, et al. *Trends in Emergency Department Visits Involving Mental and Substance Use Disorders, 2006–2013: Statistical Brief #216. Healthcare Cost and Utilization Project (HCUP)*. Rockville, MD: Statistical Briefs; 2016.
27. Comer JS, Mojtabai R, Olfson M. National trends in the antipsychotic treatment of psychiatric outpatients with anxiety disorders. *Am J Psychiatry*. 2011;168(10):1057–1065.
28. Olfson M, Kroenke K, Wang S, et al. Trends in office-based mental health care provided by psychiatrists and primary care physicians. *J Clin Psychiatry*. 2014;75(3):247–253.
29. Olfson M, Wang S, Wall M, et al. Trends in serious psychological distress and outpatient mental health care of US adults. *JAMA Psychiatry*. 2019;76(2):152–161.
30. Stata Statistical Software: Release 15 [computer program]. College Station, TX: StataCorp LP; 2017.
31. Enhancing the QUAlity and Transparency Of health Research (EQUATOR) Network. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. Equator network website. http://www.equator-network.org/reporting-guidelines/strobe/. 2019. Accessed September 25, 2019.
32. Huskamp HA, Iglehart JK. Mental health and substance-use reforms—milestones reached, challenges ahead. *N Engl J Med*. 2016;375(7):688–695.
33. Mechanic D, Olfson M. The relevance of the Affordable Care Act for improving mental health care. *Annu Rev Clin Psychol*. 2016;12(1):515–542.
34. Sherrill E, Gonzales G. recent changes in health insurance coverage and access to care by mental health status, 2012–2015. *JAMA Psychiatry*. 2017;74(10):1076–1079.
35. Andrews C, Abraham A, Grogan CM, et al. Despite resources from the ACA, most states do little to help addiction treatment programs implement health care reform. *Health Aff (Millwood)*. 2015;34(5):828–835.
36. Saloner B, Bandara S, Bachhuber M, et al. Insurance coverage and treatment use under the Affordable Care Act among adults with mental and substance use disorders. *Psychiatr Serv*. 2017;68(6):542–548.
37. Rhee TG, Rosenheck RA. Use of drug treatment services among adults with opioid use disorder: rates, patterns, and correlates. *Psychiatr Serv*. 2019;70(11):992–999.
38. Bishop TF, Press MJ, Keyhani S, et al. Acceptance of insurance by psychiatrists and the implications for access to mental health care. *JAMA Psychiatry*. 2014;71(2):176–181.
39. Doran KM, Raven MC, Rosenheck RA. What drives frequent emergency department use in an integrated health system? national data from the Veterans Health Administration. *Ann Emerg Med*. 2013;62(2):151–159.
40. Lash TL, Silliman RA. A comparison of the National Death Index and Social Security Administration databases to ascertain vital status. *Epidemiology*. 2001;12(2):259–261.
41. Cowper DC, Kubal JD, Maynard C, et al. A primer and comparative review of major US mortality databases. *Ann Epidemiol*. 2002;12(7):462–468.
42. Surveillance Report# 113: Apparent per capita alcohol consumption: National, state, and regional trends, 1977–2017. National Institute of Alcohol Abuse and Alcoholism website. https://pubs.niaaa.nih.gov/publications/surveillance113/CONS17.pdf. 2019. Accessed December 22, 2019.
43. Creedon TB, Cook BL. Access to mental health care increased but not for substance use, while disparities remain. *Health Aff (Millwood)*. 2016;35(6):1017–1021.
44. Rhee TG, Rosenheck RA. Association of current and past opioid use disorders with health-related quality of life and employment among US adults. *Drug Alcohol Depend*. 2019;199:122–128.
45. Regional differences in the drugs most frequently involved in drug overdose deaths: United States, 2017. National Center for Health Statistics of Centers for Disease Control and Prevention website. https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_12-508.pdf. 2019. Accessed December 23, 2019.
46. Rhee TG, Ross JS, Rosenheck RA, et al. Accidental drug overdose deaths in Connecticut, 2012–2018: the rise of polysubstance detection? *Drug Alcohol Depend*. 2019;205:107671.
47. Alakeson V, Pande N, Ludwig M. A plan to reduce emergency room 'boarding' of psychiatric patients. *Health Aff (Millwood)*. 2010;29(9):1637–1642.
48. Andrews C, Grogan CM, Brennan M, et al. Lessons from Medicaid's divergent paths on mental health and addiction services. *Health Aff (Millwood)*. 2015;34(7):1131–1138.
49. Larkin GL, Beautrais AL, Spirito A, et al. Mental health and emergency medicine: a research agenda. *Acad Emerg Med*. 2009;16(11):1110–1119.
50. Bhalla IP, Rosenheck RA. A change in perspective: from dual diagnosis to multimorbidity. *Psychiatr Serv*. 2018;69(1):112–116.

See supplementary material for this article at PSYCHIATRIST.COM.

THE JOURNAL OF
CLINICAL PSYCHIATRY
THE OFFICIAL JOURNAL OF THE AMERICAN SOCIETY OF CLINICAL PSYCHOPHARMACOLOGY

Supplementary Material

Article Title: Increasing Emergency Department Visits for Mental Health Conditions in the United States

Author(s): Kayla M. Theriault, BA; Robert A. Rosenheck, MD; and Taeho Greg Rhee, PhD, MSW

DOI Number: https://doi.org/10.4088/JCP.20m13241

List of Supplementary Material for the article

1. Table 1 — Demographic characteristics (column %) in emergency room visits among US adults by any mental health diagnosis, 2007-2016

Disclaimer

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

Supplementary Table 1. Demographic characteristics (column %) in emergency room visits among US adults by any mental health diagnosis, 2007-2016

	With a mental health diagnosis	Without a mental health diagnosis	Total	*P*-value
Sample size				
Unweighted visits	20,631	200,060	220,691	
Weighted visits	8,406,910	92,470,622	100,877,532	
(Row %)	(8.3%)	(91.7%)	(100.0%)	
Age				
19-44	58.5%	50.2%	50.9%	
45-64	33.1%	28.5%	28.8%	<0.001
≥ 65	8.4%	21.3%	20.3%	
Sex				
Male	52.5%	42.1%	42.9%	<0.001
Female	47.5%	57.9%	57.1%	
Race/ethnicity				
Non-Hispanic white	65.2%	62.6%	62.9%	
Non-Hispanic black	19.6%	22.0%	21.8%	0.001
Hispanic	12.1%	12.4%	12.4%	
Non-Hispanic other	3.1%	3.0%	3.0%	
Insurance coverage				
Private	21.0%	28.2%	27.6%	
Medicare	10.7%	18.0%	17.4%	
Medicaid	30.9%	22.8%	23.4%	<0.001
Other	27.7%	23.5%	23.9%	
Missing/not reported	9.7%	7.5%	7.7%	

Note: Data were from National Hospital Ambulatory Medical Care Survey.