

Trends in US Emergency Department Visits for Mental Health, Overdose, and Violence Outcomes Before and During the COVID-19 Pandemic

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IMPORTANCE The coronavirus disease 2019 (COVID-19) pandemic, associated mitigation measures, and social and economic impacts may affect mental health, suicidal behavior, substance use, and violence.

OBJECTIVE To examine changes in US emergency department (ED) visits for mental health conditions (MHCs), suicide attempts (SAs), overdose (OD), and violence outcomes during the COVID-19 pandemic.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study used data from the Centers for Disease Control and Prevention's National Syndromic Surveillance Program to examine national changes in ED visits for MHCs, SAs, ODs, and violence from December 30, 2018, to October 10, 2020 (before and during the COVID-19 pandemic). The National Syndromic Surveillance Program captures approximately 70% of US ED visits from more than 3500 EDs that cover 48 states and Washington, DC.

MAIN OUTCOMES AND MEASURES Outcome measures were MHCs, SAs, all drug ODs, opioid ODs, intimate partner violence (IPV), and suspected child abuse and neglect (SCAN) ED visit counts and rates. Weekly ED visit counts and rates were computed overall and stratified by sex.

RESULTS From December 30, 2018, to October 10, 2020, a total of 187 508 065 total ED visits (53.6% female and 46.1% male) were captured; 6 018 318 included at least 1 study outcome (visits not mutually exclusive). Total ED visit volume decreased after COVID-19 mitigation measures were implemented in the US beginning on March 16, 2020. Weekly ED visit counts for all 6 outcomes decreased between March 8 and 28, 2020 (March 8: MHCs = 42 903, SAs = 5212, all ODs = 14 543, opioid ODs = 4752, IPV = 444, and SCAN = 1090; March 28: MHCs = 17 574, SAs = 4241, all ODs = 12 399, opioid ODs = 4306, IPV = 347, and SCAN = 487). Conversely, ED visit rates increased beginning the week of March 22 to 28, 2020. When the median ED visit counts between March 15 and October 10, 2020, were compared with the same period in 2019, the 2020 counts were significantly higher for SAs ($n = 4940$ vs 4656 , $P = .02$), all ODs ($n = 15 604$ vs $13 371$, $P < .001$), and opioid ODs ($n = 5502$ vs 4168 , $P < .001$); counts were significantly lower for IPV ED visits ($n = 442$ vs 484 , $P < .001$) and SCAN ED visits ($n = 884$ vs 1038 , $P < .001$). Median rates during the same period were significantly higher in 2020 compared with 2019 for all outcomes except IPV.

CONCLUSIONS AND RELEVANCE These findings suggest that ED care seeking shifts during a pandemic, underscoring the need to integrate mental health, substance use, and violence screening and prevention services into response activities during public health crises.

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The novel coronavirus disease 2019 (COVID-19) pandemic resulted in major disruption to public health infrastructure and societal norms and necessitated physical distancing measures (eg, stay-at-home orders) to slow spread of the virus. Research suggests that the social isolation that resulted from these measures, coupled with fear of contagion, may have a detrimental effect on mental health.¹⁻⁴ Economic stress, including financial hardship and job loss, may worsen mental health and contribute to increases in suicide, substance use, and violence.^{1,3-11} Furthermore, the shutdown of businesses, schools, and other public entities resulted in reduced or modified access to mental health treatment, addiction and recovery support services, and services designed to support families experiencing or at risk for violence victimization.^{12,13} To avoid risk of exposure to COVID-19, many people delayed or avoided seeking medical care,¹⁴ potentially increasing the risk of poor mental health, substance use, and violence outcomes.

Past research¹⁵⁻¹⁷ on large-scale natural disasters and disasters of human origin indicates that such events can result in short- and long-term increases in mental health problems, substance use, intimate partner violence (IPV), and child abuse. Indeed, in the wake of COVID-19 physical distancing protocols implemented across the US, social isolation, mental health conditions, substance use, and violence have been self-reported.^{4,13,18,19} One survey⁴ found that nearly 1 in 7 US adults reported psychological distress in April 2020, during the peak of stay-at-home orders, compared with 1 in 25 adults in April 2018. Furthermore, increased domestic violence and child abuse hotline call volume at the onset of the pandemic may indicate that violence increased while individuals likely spent more time with potential perpetrators.²⁰⁻²² These findings suggest that increases in poor mental health, suicidal behavior, substance use, and violence outcomes have occurred during the COVID-19 pandemic; however, few studies have documented trends in these outcomes before and during the pandemic.

To address this gap and better understand the potential impact of COVID-19 on mental health, violence, and injury outcomes, we used near real-time data from the National Syndromic Surveillance Program (NSSP) at the Centers for Disease Control and Prevention (CDC) to describe changes in emergency department (ED) visits associated with mental health conditions (MHCs), suicide attempts (SAs), drug and opioid overdose (OD), IPV, and suspected child abuse and neglect (SCAN) before and during the US COVID-19 outbreak. Given preliminary and anecdotal reports^{4,13,18,19} of increases in these outcomes during the pandemic, we hypothesize that ED visit rates for these outcomes will increase but outcome counts will decrease based on prior research documenting decreases in total ED visit volume.¹⁴

Methods

Data Source

Data came from the CDC's NSSP, a collaboration of the CDC, local and state health departments, and health care facilities

Key Points

Question Did US emergency department (ED) visits for mental health, suicide attempts, overdose, and violence outcomes change during the coronavirus disease 2019 (COVID-19) pandemic?

Findings This cross-sectional study of almost 190 million ED visits found that visit rates for mental health conditions, suicide attempts, all drug and opioid overdoses, intimate partner violence, and child abuse and neglect were higher in mid-March through October 2020, during the COVID-19 pandemic, compared with the same period in 2019.

Meaning These findings suggest that ED use and priorities for care seeking shifted during the COVID-19 pandemic, underscoring mental health, substance use, and violence risk screening and prevention needs during public health crises.

supporting the collection of electronic health data from ED, urgent care center, inpatient facility, and laboratory visits.²³ More than 3500 active emergency facilities that represent portions of 48 states (excluding Hawaii and Wyoming) and Washington, DC, contribute data to NSSP, accounting for approximately 70% of all US EDs. The present study includes only data from EDs (n = 3119 in 2019 and 3598 in 2020).²⁴ The CDC determined this project to be public health surveillance rather than research that involved human subjects; thus, institutional review board approval and informed consent were not required for these secondary data analyses. All data were deidentified. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

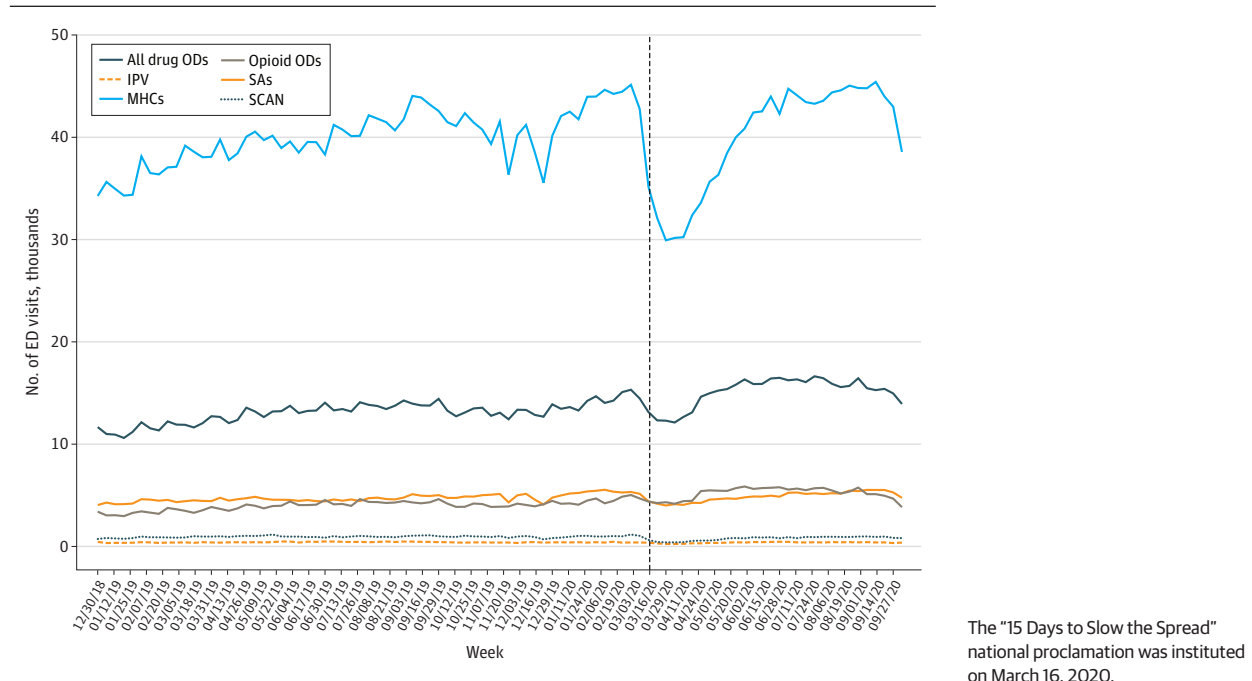
Outcomes

The NSSP collects data on chief concerns, including the reason for the health care visit and *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)*, *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Clinical Modification (ICD-10-CM)*, and Systematized Nomenclature of Medicine (SNOMED) diagnosis codes.^{25,26} Queries that incorporated Boolean logic within chief concern and diagnosis code fields were analyzed in the NSSP's Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) software to identify ED visits that matched syndrome definitions for 6 outcomes: mental health conditions associated with disasters (ie, mental health conditions expected to increase after a natural disaster or disaster of human origin, such as stress, anxiety, symptoms consistent with acute stress disorder or posttraumatic stress disorder, and panic), SAs, all drug ODs (ie, ODs from any prescription or illicit substance), opioid ODs (ie, ODs from any prescription or illicit opioid), IPV, and SCAN. eTable 1 in the [Supplement](#) describes syndrome definition chief concern search terms, diagnosis codes, and negations.

Statistical Analysis

Weekly ED visit counts and rates (ie, the percentage of all ED visits associated with an outcome per 100 000 ED visits) were

Figure 1. Count of Emergency Department (ED) Visits for All Drug and Opioid Overdoses (ODs), Intimate Partner Violence (IPV), Suicide Attempts (SAs), Mental Health Conditions (MHCs), and Suspected Child Abuse and Neglect (SCAN) in the US, December 30, 2018, to October 10, 2020



computed overall and stratified by sex. Presenting ED visit counts alongside rates from December 30, 2018, through October 10, 2020, provides important context for interpreting results because the denominator (ie, number of total ED visits) decreased substantially in the wake of the COVID-19 outbreak (42% lower in March to April 2020 compared with the same time frame in 2019).¹⁴ The ED visit counts and rates for MHCs, SAs, and all drug and opioid ODs were calculated for patients older than 10 years, IPV was examined for patients older than 18 years, and SCAN visits were limited to patients 0 to 17 years of age. Mean weekly ED visit counts and rates are presented for weeks 1 to 11 (before the decrease in overall ED visits) and weeks 12 to 41 (after the decrease in overall ED visits) and including the period in which the “15 Days [subsequently 30 Days] to Slow the Spread” national stay-at-home order was implemented^{14,27} to understand changes before and during the US COVID-19 outbreak, and weeks 1 to 41 overall. Finally, median ED visit counts and rates from weeks 1 to 11 and 12 to 41 in 2019 were compared with the corresponding 2020 periods for each outcome using Wilcoxon rank sum tests. Analyses were conducted in R, version 3.4.2 (R Foundation for Statistical Computing); results with a 2-tailed $P < .05$ were considered statistically significant.

Results

From December 30, 2018, to October 10, 2020, a total of 187 508 065 ED visits (53.6% female and 46.1% male) were reported to the NSSP, 6 018 318 of which included at least 1 study outcome (visits not mutually exclusive). Sex distributions by

outcome are presented in eTable 2 in the [Supplement](#). Total ED visit volume decreased soon after COVID-19 mitigation measures were implemented in the US beginning March 16, 2020. eFigure 1 in the [Supplement](#) depicts the percentage change in 2020 for total weekly ED visits and all 6 study outcomes compared with the corresponding weeks in 2019. At their lowest point, ED visits for MHCs, SAs, and IPV decreased to a lesser extent (24.1% for MHCs, 13.1% for SAs, and 33.7% for IPV) than overall ED visits (43.1%) during the early weeks of the COVID-19 pandemic. All drug ODs had a slight decrease from March 29 to April 11 (range, 3.4%-4.3%) compared with the same weeks in 2019, but otherwise weekly counts of all drug and opioid ODs ranged from 1% to 45% higher in 2020 compared with the same week in 2019. Conversely, ED visits for SCAN exhibited a more pronounced decrease than overall ED visits between March 15 and May 17, 2020 (range, 30.8%-50.7%).

Figure 1 depicts changes in ED visit counts during the study period. In 2020, ED visit counts for each outcome except IPV decreased beginning in week 11 (March 8-14). The ED visits for IPV peaked in mid-February 2020 ($n = 514$ in week 8) before the COVID-19 outbreak in the US yet decreased thereafter, demonstrating a 33.8% decrease in week 14 ($n = 294$ in 2020 vs 444 in 2019). Beginning in week 12 of 2020, compared with the corresponding week in 2019, ED visit counts decreased for all outcomes except opioid ODs, with the greatest decreases ranging from 4.3% for all drug ODs ($n = 12 193$ in 2020 vs 12 737 in 2019) to 57.0% for SCAN in week 15 ($n = 452$ in 2020 vs 1052 in 2019). Visits for all outcomes began to rebound between weeks 16 and 17 (April 12-25, 2020).

Table 1 presents the mean weekly ED visit counts and rates during weeks 1 to 41 of 2019 and 2020; results are also

Table 1. Mean Numbers and Rates^a of Total ED Visits and ED Visits for MHCs, SAs, ODs, and Violence Outcomes, US, December 30, 2018, to October 10, 2020

Outcome	Weeks 1-41 ^b				Weeks 1-11 ^c				Weeks 12-41 ^d			
	2019		2020		2019		2020		2019		2020	
	Mean No. of ED visits	Mean ED visit rate ^a	Mean No. of ED visits	Mean ED visit rate ^a	Mean No. of ED visits	Mean ED visit rate ^a	Mean No. of ED visits	Mean ED visit rate ^a	Mean No. of ED visits	Mean ED visit rate ^a	Mean No. of ED visits	Mean ED visit rate ^a
Total ED visits	2 112 486		1 876 015		2 093 114		2 318 218		2 119 589		1 713 874	
Age ≥10 y	1 864 093		1 704 812		1 818 684		2 015 247		1 880 743		1 590 985	
Age ≥18 y	1 730 918		1 603 913		1 683 244		1 861 572		1 748 399		1 509 438	
Age 0-17 y	368 946		262 944		398 883		445 912		357 969		195 855	
Disaster-associated MHCs ^e	39 366	2110.2	41 075	2436.7	36 294	1995.5	43 378	2153.7	40 492	2152.3	40 230	2540.4
SAs ^e	4624	248.0	5040	300.5	4403	242.1	5300	263.1	4705	250.1	4944	314.2
All drug ODs ^e	12 891	691.0	14 959	899.1	11 570	636.2	14 291	709.5	13 376	711.1	15 204	968.6
Opioid ODs ^e	3940	211.1	5075	306.9	3380	185.8	4547	225.7	4145	220.4	5269	336.7
IPV ^f	471	27.2	434	27.3	430	25.5	453	24.3	485	27.7	427	28.4
SCAN ^g	1002	274.5	889	377.2	897	225.0	1040	234.1	1040	292.7	833	429.7

Abbreviations: ED, emergency department; IPV, intimate partner violence; MHC, mental health condition; OD, overdose; SA, suicide attempt; SCAN, suspected child abuse and neglect.

^a Represents the proportion of all ED visits associated with the outcome of interest per 100 000 ED visits.

^b Weeks 1 to 41 in 2019 correspond to December 30, 2018, to October 12, 2019. Weeks 1 to 41 in 2020 correspond to December 29, 2019, to October 10, 2020.

^c Weeks 1 to 11 in 2019 correspond to December 30, 2018, to March 16, 2019. Weeks 1 to 11 in 2020 correspond to December 29, 2019, to March 14, 2020.

^d Weeks 12 to 41 in 2019 correspond to March 17 to October 12, 2019. Weeks 12 to 41 in 2020 correspond to March 15, 2020, to October 10, 2020.

^e Numbers and rates of ED visits for disaster-associated MHCs, SAs, and all drug and opioid ODs were calculated for patients 10 years or older.

^f Numbers and rates of ED visits for IPV were calculated for patients 18 years or older.

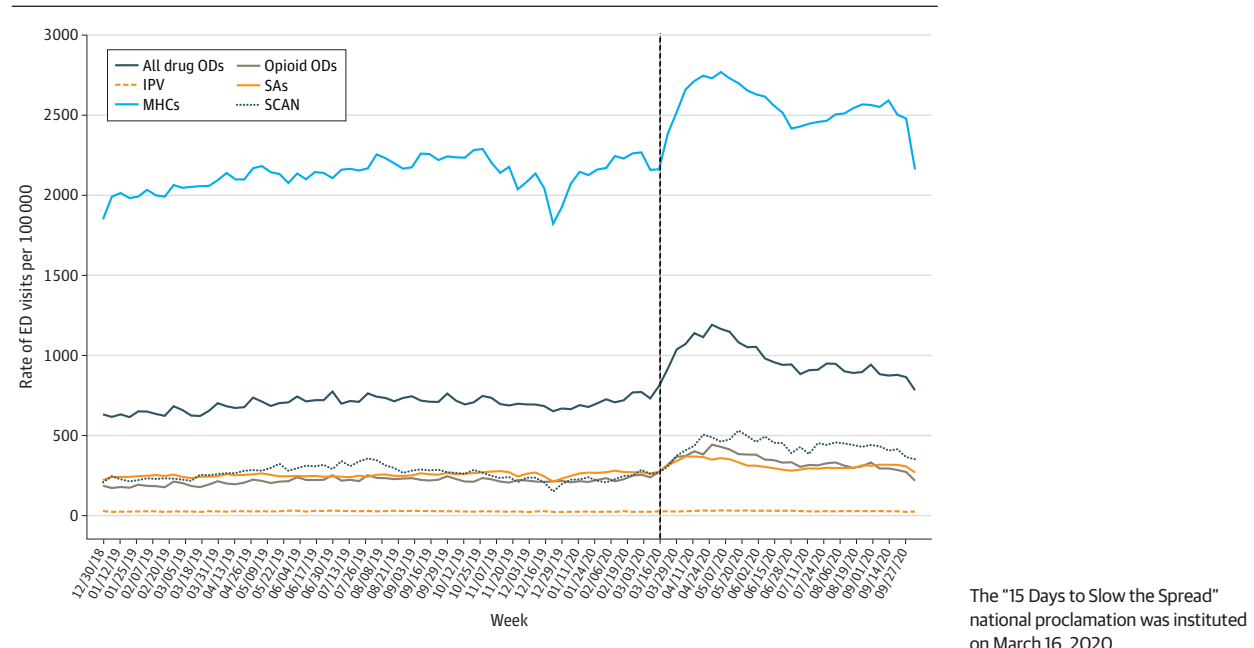
^g Numbers and rates of ED visits for SCAN were calculated for patients 0 to 17 years of age.

presented for weeks 1 to 11 and 12 to 41 of 2020 (ie, before and after the notable decrease in ED visits overall and the period during which nationwide mitigation measures were implemented). Mean weekly counts for all outcomes except IPV and SCAN were greater in weeks 1 to 41 of 2020 than in the same period in 2019 (MHCs: n = 41 075 in 2020 vs 39 366 in 2019; SAs: n = 5040 in 2020 vs 4624 in 2019; all drug ODs: n = 14 959 in 2020 vs 12 891 in 2019; opioid ODs: n = 5075 in 2020 vs 3940 in 2019; IPV: n = 434 in 2020 vs 471 in 2019; SCAN: n = 889 in 2020 vs 1002 in 2019), and mean rates for all outcomes were higher in 2020 than in 2019 for the same period (MHCs: rate = 2436.7 in 2020 vs 2110.2 in 2019; SAs: rate = 300.5 in 2020 vs 248.0 in 2019; all drug ODs: n = 899.1 in 2020 vs 691.0 in 2019; opioid ODs: rate = 306.9 in 2020 vs 211.1 in 2019; IPV: rate = 27.3 in 2020 vs 27.2 in 2019; SCAN: rate = 377.2 in 2020 vs 274.5 in 2019). With the exception of opioid ODs, for which 2020 weekly counts never decreased below the mean count of visits in weeks 1 to 41 of 2019 (n = 3940), the number of weekly ED visits for all outcomes decreased below their mean 2019 numbers (n = 39 366 for MHCs, n = 4624 for SAs, n = 12 891 for all drug ODs, n = 471 for IPV, and n = 1002 for SCAN in 2019) during the period in which the “15 Days [subsequently 30 Days] to Slow the Spread [of COVID-19]” national stay-at-home order was implemented (ie, March 16 to April 15, 2020) (Figure 1). Furthermore, the mean weekly rate of ED visits for all outcomes was greater in weeks 12 to 41 of 2020 (the period after the implementation of nationwide mitigation measures; MHCs = 2540.4; SAs = 314.2; all drug ODs = 968.6; opioid ODs = 336.7; IPV = 28.4; and

SCAN = 429.7) compared with all other periods examined (weeks 1-41 of 2019 [MHCs = 2110.2; SAs = 248.0; all drug ODs = 691.0; opioid ODs = 211.1; IPV = 27.2; and SCAN = 274.5] and weeks 1-11 of 2019 [MHCs = 1995.5; SAs = 242.1; all drug ODs = 636.2; opioid ODs = 185.8; IPV = 25.5; and SCAN = 225.0] and 2020 [MHCs = 2153.7; SAs = 263.1; all drug ODs = 709.5; opioid ODs = 225.7; IPV = 24.3; and SCAN = 234.1]). All drug and opioid ODs were the only 2 outcomes that exhibited an increase in mean weekly counts in weeks 12 to 41 of 2020 compared with all other periods examined (all drug overdoses: n = 15 204 for weeks 12-41 of 2020 vs 12 891 for weeks 1-41 of 2019, n = 11 570 for weeks 1-11 of 2019 vs 14 291 for weeks 1-11 of 2020; opioid ODs: n = 5269 for weeks 12-41 of 2020 vs 3940 for weeks 1-41 of 2019, and n = 3380 for weeks 1-11 of 2019 vs 4547 for weeks 1-11 of 2020). Meanwhile, IPV and SCAN were the only 2 outcomes that exhibited a decrease in mean weekly counts in weeks 12 to 41 of 2020 compared with all other periods included in the study (IPV: n = 427 for weeks 12-41 of 2020 vs 471 for weeks 1-41 of 2019, n = 430 for weeks 1-11 of 2019 vs 453 for weeks 1-11 of 2020; SCAN: n = 833 for weeks 12-41 of 2020 vs 1002 for weeks 1-41 of 2019, n = 897 for weeks 1-11 of 2019 vs 1040 for weeks 1-11 of 2020). The ED visit counts were higher among female than male patients for all outcomes except for all drug and opioid ODs (eFigure 2 in the Supplement).

Because total ED visit counts decreased markedly beginning in March 2020, it is imperative to apply traditional methods for reporting syndromic surveillance data by examining changes observed in the ED visit rates per 100 000 ED visits

Figure 2. Rate of Emergency Department (ED) Visits for All Drug and Opioid Overdoses (ODs), Intimate Partner Violence (IPV), Suicide Attempts (SAs), Mental Health Conditions (MHCs), and Suspected Child Abuse and Neglect (SCAN) per 100 000 ED Visits in the US, December 30, 2018, to October 10, 2020



The "15 Days to Slow the Spread" national proclamation was instituted on March 16, 2020.

for each outcome (Figure 2). The ED visit rates for MHCs, SAs, and all drug and opioid ODs exceeded the 2019 week 1 to 41 mean rates (2110.2 for MHC visits, 248.0 for SA visits, 691.0 for all drug OD visits, and 211.1 for opioid OD visits) beginning in January 2020 and remained greater throughout the entire study period; however, stark increases in rates for these outcomes were observed beginning in week 13 (March 22-28; rates of 2379.0 for MHCs, 313.1 for SAs, 915.3 for all drug ODs, and 317.9 for opioid ODs). The rate of all ED visits for IPV in 2020 exceeded the 2019 week 1 to 41 mean (rate, 27.2) beginning in week 16 (April 12-18; rate, 29.0) and remained higher through week 28 (July 5-11; rate, 28.5), decreasing slightly thereafter. For SCAN, rates fluctuated greatly in 2019 and 2020 but exhibited a steady increase, consistently exceeding the 2019 week 1-41 mean (rate, 274.5) beginning in week 13 (March 22-28; rate, 306.6) and remaining higher throughout the study period. Whereas rates for MHCs, SAs, all drug and opioid ODs, and IPV in 2020 peaked between weeks 15 and 19 (April 3 to May 11), rates for SCAN peaked later in week 22 (May 24-30). For all outcomes except all drug and opioid ODs, female patients experienced greater rates than male patients (eFigure 2 in the Supplement).

Median ED visit counts were significantly higher in weeks 12 to 41 of 2020 than 2019 for SAs ($n = 4940$ vs 4656 , $P = .02$) and all drug ($n = 15\,604$ vs $13\,371$, $P < .001$) and opioid ODs ($n = 5502$ vs 4168 , $P < .001$); counts were significantly lower for IPV ED visits ($n = 442$ vs 484 ; $P < .001$) and SCAN ED visits ($n = 884$ vs 1038 ; $P < .001$) (Table 2). Week 12 to 41 median rates were significantly higher in 2020 compared with 2019 for MHCs (2539.9 vs 2150.5, $P < .001$), SAs (310.8 vs 248.0, $P < .001$), all drug ODs (940.2 vs 711.1, $P < .001$), opioid ODs (330.2 vs 222.3, $P < .001$), and SCAN (439.3 vs 286.3, $P < .001$).

Discussion

To our knowledge, this cross-sectional study is the first to provide hospital encounter data demonstrating a potential association between the pandemic and MHCs, SAs, ODs, and violence outcomes at the national level. Fear and worry about the COVID-19 pandemic, combined with implementation of mitigation measures and resultant social isolation and economic distress, stand to markedly impact MHCs, SAs, drug ODs, and violence. Indeed, research has already documented self-reported psychological distress and loneliness among US adults in the midst of COVID-19 stay-at-home orders.⁴

Although patterns varied for outcomes examined, ED visit counts consistently decreased near the beginning of the pandemic after the declaration of a national emergency on March 13 and the "15 Days to Slow the Spread" national proclamation on March 16 (subsequently extended to 30 days),^{27,28} whereas ED visit rates for outcomes increased, most likely as a function of the overall decrease in ED visit counts (ie, the denominator used in this study). Of importance, this study demonstrates that people still visited EDs for these outcomes and that, for the most part, visits for these outcomes decreased to a lesser extent than overall ED visits, suggesting that MHCs, SAs, ODs, and violence remain a concern during the COVID-19 pandemic. In addition, the findings suggest that visits for these outcomes were likely of sufficient severity that treatment at an ED was a necessary risk during the pandemic, despite stay-at-home orders advising people to avoid public spaces.

Overdoses exhibited great increases in weekly counts in 2020 compared with 2019. That all drug and opioid OD ED visits did not decrease in a similar manner to other ED visits is

Table 2. Comparison of Median Numbers and Rates^a for MHCs, SAs, All Drug ODs, Opioid ODs, IPV, and SCAN Before and During the COVID-19 Pandemic, US, December 30, 2018, to October 10, 2020

Outcome	Median No.						Median rates ^a					
	Week 1-11 ^b			Week 12-41 ^c			Week 1-11 ^b			Week 12-41 ^c		
	2019	2020	P value	2019	2020	P value	2019	2020	P value	2019	2020	P value
MHCs ^d	36 492	44 099	<.001	40 257	42 610	.24	1992.9	2153.9	<.001	2150.5	2539.9	<.001
SAs ^d	4391	5337	<.001	4656	4940	.02	241.4	267.8	<.001	248.0	310.8	<.001
All drug ODs ^d	11 624	14 307	<.001	13 371	15 604	<.001	630.0	705.1	<.001	711.1	940.2	<.001
Opioid ODs ^d	3366	4516	<.001	4168	5502	<.001	184.2	222.2	<.001	222.3	330.2	<.001
IPV ^e	430	449	.12	484	442	<.001	25.7	24.1	.11	27.5	28.3	.44
SCAN ^f	911	1045	<.001	1038	884	<.001	226.3	226.4	.49	286.3	439.3	<.001

Abbreviations: ED, emergency department; COVID-19, coronavirus disease 2019; IPV, intimate partner violence; MHC, mental health condition; OD, overdose; SA, suicide attempt; SCAN, suspected child abuse and neglect.

^a Represents the proportion of all ED visits associated with outcome of interest per 100 000 ED visits.

^b Weeks 1 to 11 in 2019 correspond to December 30, 2018, March 16, 2019. Weeks 1 to 11 in 2020 correspond to December 29, 2019, to March 14, 2020.

^c Weeks 12 to 41 in 2019 correspond to March 17 to October 12, 2019. Weeks 12

to 41 in 2020 correspond to March 15, 2020, to October 10, 2020.

^d Numbers and rates of ED visits for MHCs, SAs, and all drug and opioid ODs were calculated for patients 10 years or older.

^e Numbers and rates of ED visits for IPV were calculated for patients 18 years or older.

^f Numbers and rates of ED visits for SCAN were calculated for patients 0 to 17 years of age.

especially compelling, suggesting an increase in OD burden during the pandemic. Opioid ODs in particular exhibited the most consistent increases in counts, with only a limited decrease observed during the period in 2020 when overall ED visits were low, never decreasing below weekly counts observed in the first 41 weeks of 2019. This finding might reflect changes in the illicit drug supply during the pandemic and that persons using opioids used them alone or in higher-risk ways, increasing the likelihood of OD, or that they lacked access to naloxone or other risk-reduction services—all potential effects of COVID-19 mitigation measures.

The ED visit counts and rates for all outcomes began to decrease toward the latter part of the study period, in tandem with an increase in total ED visits and as stay-at-home orders were relaxed across the US.²⁹ This decrease could be indicative of a number of issues: the public resuming normal health-seeking behaviors, the lifting of stay-at-home orders and a perception of increased safety and reduced risk of COVID-19 spread, or the public's adjustment to mitigation measures or ability to identify coping strategies (eg, telehealth or telemental health services and consolation from widespread messaging).³⁰

Given that the ED visit counts for outcomes decreased while visit rates increased, caution is warranted in interpreting results, and findings may be indicative of increased burden or increased help-seeking behavior. It is also possible that the observed increases in ED visit rates for MHCs, SAs, ODs, and violence may reflect the decrease in total ED visits and changing ED use patterns during the pandemic. Still, this study is the first, to our knowledge, to use near real-time data to monitor changes in these outcomes, and findings carry important implications for prevention, treatment, and response at the individual, relationship, community, and societal levels.^{31,32} For individuals presenting to EDs, implementation of evidence-based interventions (eg, counseling on safe storage of lethal means of suicide, ensuring naloxone provision, buprenorphine therapy initiation, and screening for IPV) and linkage to

in-person or virtual behavioral health and social support services and medications for opioid use disorder can provide immediate assistance to those in crisis.³³⁻³⁸ Furthermore, existing in-person services could be adapted for virtual implementation (eg, virtual home visits through the Nurse-Family Partnership or from state child protective services agencies) and may include precautions to ensure patients' safety at home. Finally, together with individual-level strategies, implementation of broader societal- and community-level prevention efforts is paramount to ongoing COVID-19 pandemic response and recovery efforts. Strategies may include mass media campaigns that emphasize resilience, help-seeking, and available resources (eg, the national Disaster Distress Helpline), strengthening economic supports to minimize financial stress, payment policies and regulatory changes to support expanded telehealth and addiction treatment services, and promoting social connectedness.^{37,39,40} These community-level prevention efforts may serve to blunt potential population-level associations of the pandemic with MHCs, substance use, and violence.

Limitations

This study has limitations. Data are not nationally representative, and results may not generalize to EDs not participating in the NSSP. Participation of EDs in the NSSP varies over time and increased from 2019 to 2020; weekly ED visit rates were calculated as a percentage of the total number of ED visits per 100 000 ED visits to account for these changes. Thus, rates could be influenced by characteristics of the populations served by EDs or changes in total ED visits, which decreased substantially during COVID-19.¹⁴ The ED visit counts for examined outcomes are presented to demonstrate change in ED visit burden for these conditions during the pandemic; however, data should not be interpreted as exact case counts because visit information may change over time and facility data submission may be interrupted or delayed. Although not available in ESSENCE's current functionality, future research

should examine changes in counts and rates of ED visits among only those EDs that consistently contributed data to the NSSP over time. Study outcome syndrome definitions might underestimate or overestimate ED visits because of reporting differences among facilities. Chief concern and diagnosis data may also be incomplete when visits are first recorded. The ED visits represent unique events and may reflect multiple visits for 1 person. Still, these results likely underestimate the number of health care visits associated with study outcomes because many patients who experience MHCs, SAs, drug ODs, and violence incidents do not present to EDs. Future research may incorporate additional analyses to examine the significance of observed changes over time, examine changes during longer periods, and incorporate additional data (eg, hotline data, emergency medical services, and mortality data) to provide context and improve interpretation of trends.

Conclusions

This study describes changes in national-level ED visit counts and rates for MHCs, SAs, ODs, and violence outcomes, which may be associated with societal-, community-, and individual-level stressors associated with the COVID-19 pandemic. Past research on public health crises suggests it is likely that COVID-19 and associated mitigation measures will have impacts that far outlast the short-term emergency period and that may intensify during periods of increased transmission.¹⁵⁻¹⁷ This study's findings underscore the need for continued MHC, suicide, OD, and violence prevention messages, screening, and interventions at the individual, relationship, community, and societal levels, as well as longitudinal surveillance to track the long-term impacts of COVID-19.

ARTICLE INFORMATION

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