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Brief Report: The Impact of COVID-19 on Emergency Department Overdose Diagnoses and County Overdose Deaths

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Background and Objectives: We sought to understand the impact of COVID-19 on emergency department (ED) overdoses and county coroner verified overdose deaths.
Methods: Electronic medical health record and county coroner data were gathered and comparisons were made between three 16-week time periods. In the three time periods, 873 individuals had an overdose diagnosis in the ED and 440 individuals in the county died of drug overdose.
Results: While total ED patient volume decreased substantially, the number of ED overdose patients increased between March 6 and June 25, 2020. Furthermore, during this same period, coroner data revealed an increase in overdose deaths.
Conclusion and Scientific Significance: This preliminary evidence provides a key insight into the impact of COVID-19 on both overdose presentations to the ED and county overdose deaths. These results emphasize the critical need for increasing vigilance to prevent overdose by continuously developing and optimizing both accessible and quality treatment as we navigate through this pandemic and its ongoing effects on persons with substance use disorder. (Am J Addict 2021;30:330–333)

INTRODUCTION

The COVID-19 global pandemic has resulted in wide-ranging challenges to the healthcare system. Individuals who are stigmatized and underserved, such as patients with substance use disorder (SUD), face treatment impediments and have added vulnerability to intensifying drug usage, relapse, and overdose.[1] Even for individuals succeeding in recovery, the psychological distress of a pandemic may cause a relapse. Measures such as physical distancing lead to isolation from peer support, crucial for maintaining sobriety.[1,2] Furthermore, patients with SUD who dutifully observe distancing may lack contact with observers who could administer naloxone to save their lives, should they relapse and overdose.[2]

Observing the co-occurrence of two public health crises (COVID-19 and the substance use epidemic), we sought to understand the impact of COVID-19 on emergency department (ED) visits for overdose and coroner-verified overdose deaths. This insight on ED overdose patients and county overdose deaths can inform stakeholders who develop strategies to address this public health crisis, in addition to public health experts tasked with advancing treatment strategies to combat COVID-19. The purpose of this work was to provide preliminary evidence regarding the distribution of overdoses in the ED and county deaths due to overdose during the early months of the COVID-19 pandemic. Comparisons were made to determine presence of trends.

METHODS

We conducted a review of patients presenting to our urban, Level 1 trauma center at the University of Louisville (annual ED visit volume of 57,000) and overdose diagnosis over three time periods in Jefferson County. Louisville is the largest city in the state of Kentucky and Jefferson County is the most populated county in the state (population 760,000), which in 2018 ranked in the top 10 of all states for drug overdose deaths.[3] The time period chosen to examine the impact of COVID-19 began on March 6, 2020. This date was chosen as it was the day the state of emergency was declared by the governor.[4] Data were compared over 16 weeks at the start of the declaration with the same 16-week period in 2019 as well as the 16 weeks prior to March 6, 2020. Data were obtained from our electronic medical record to build a matrix with all patient visits from the specified time periods. We further examined diagnoses to determine which patients had

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overdosed using queries of "overdose" and "pois" for poison. For local deaths, we inspected Jefferson County Coroner's Office data. This study was approved by the University of Louisville Institutional Review Board. We determined event frequencies within each time period and calculated percent change to determine trends. We utilized IBM SPSS software Version 26.

RESULTS

ED Overdose Diagnoses

First comparisons were made between March 6, 2020 to June 25, 2020 (Period 3) and March 6, 2019 to June 25, 2019 (Period 1) to determine if there were annual changes in ED overdose diagnoses. In the 16-week period in 2020, diagnoses of overdoses increased to 340 from 259 in the same period during 2019. Despite the decrease in total ED volume (by 21.3%) during this 16-week period, compared with the same 16 weeks in 2019, in 2020, overdose diagnoses increased by 31.3%. The median age was 35 in bot h time periods. Males and black or African Americans had higher percentages of the patient population with overdose diagnoses in 2020 compared with the same period in 2019 (Table 1).

Next comparisons were made between March 6, 2020 to June 25, 2020 (Period 3) and the 16-week period prior (November 15, 2019 to March 5, 2020; Period 2). In the 16-week period of March 6 to June 25, 2020, individuals in the ED who had overdose diagnoses increased by 66 compared with the 16 weeks prior. Despite a decrease in total ED volume during this 16-week period compared with 16 weeks up to March 6 (by 20.9%), overdose diagnoses increased 24.1%. The median age was 35 in both time periods. There were slightly higher percentages of males and black or African Americans presenting to the ED with overdose from March 6 to June 25, 2020 compared with the 16 weeks prior (Table 1).

County Overdose Deaths

County overdose comparisons were first made between March 6, 2020 to June 25, 2020 (Period 3) and March 6, 2019 to June 25, 2019 (Period 1) to see if there were annual changes in overdose deaths. In the 16-week period in 2020, overdose deaths increased to 198 from 105 in the same period during 2019 (increase of 88.6%). During the 2020 time

TABLE 1. Emergency department overdose diagnoses and county overdose deaths

	Period 1 (03/06/19 to 06/25/19)	Period 2 (11/15/19 to 03/05/20)	Period 3 (03/06/20 to 06/25/20)
Emergency overdose diagnoses			
• Count	259	274	340
◦ Per day	2.31	2.45	3.04
◦ Per week	16.19	17.13	21.25
• Age, median [IQR]	35 [28-47]	35 [29-42]	35 [28-43]
• Sex (%)			
◦ Female	99 (38.2)	88 (32.1)	107 (31.5)
◦ Male	160 (61.8)	186 (67.9)	233 (68.5)
• Race (%)			
◦ Black or African American	56 (21.6)	71 (25.9)	95 (27.9)
◦ White	200 (77.2)	199 (72.6)	239 (70.3)
◦ Other or unknown	3 (1.2)	4 (1.5)	6 (1.8)
County overdose deaths			
• Count	105	137	198
◦ Per day	0.94	1.22	1.77
◦ Per week	6.56	8.56	12.38
• Age, median [IQR]	40.5 [34-48]	41 [33-52]	39 [31-50]
• Sex (%)			
◦ Female	31 (29.5)	41 (29.9)	54 (27.4)
◦ Male	74 (70.5)	96 (70.1)	143 (72.6)
• Race (%)			
◦ Black or African American	17 (16.2)	32 (23.4)	33 (16.7)
◦ White	88 (83.8)	103 (75.2)	161 (81.3)
◦ Other or unknown	0 (0)	2 (1.5)	4 (2)

For county overdose deaths: 1 unknown age in Period 1 and 1 unknown sex in Period 3.
IQR = interquartile range.

period, there were about 12.4 deaths per week compared with about 6.6 deaths per week in 2019. The median age was slightly higher in 2019 compared with 2020. Males and individuals who were black or African American had higher percentages of deaths between March 6 to June 25, 2020 (Table 1).

Next we compared county overdoses between March 6, 2020 to June 25, 2020 and the 16 weeks prior to March 6, 2020. Overdose deaths had increased by 61 or an increase of 44.5%. The median age was slightly lower between March 6, 2020 and June 25, 2020 compared with the 16 weeks prior. Males and individuals who were white had higher percentages of deaths between March 6 to June 25, 2020 compared with the 16 weeks prior (Table 1).

DISCUSSION

While the ED volume was down between March 6 to June 26, 2020 compared with both the same 16-week period in 2019 and the 16 weeks prior to March 6, overdose diagnoses were up. Furthermore, a large increase in deaths occurred after the state's declaration of emergency. These preliminary results demonstrate the impact of the substance use crisis co-existing with the global pandemic.

Similar to Westgard et al,[5] our ED experienced a dramatic decrease in total ED volume. Despite this, our overdose diagnoses increased. COVID-19 has impacted mental well-being, leading to detrimental effects on individuals with SUD and likely triggering drug use and abuse.[6] Furthermore, this work found an increasing number of overdose deaths within our county. During the early stages of COVID-19, many treatment centers limited hours and services, which may have contributed to the increase in overdose deaths.[7] Physicians, policymakers, and all stakeholders involved in combatting this opioid epidemic should be aware of how the shift in usual/routine addiction treatment practices may impact individuals with SUD, including the risk of overdose death, especially for those who benefit most from in-person accountability.[8]

System interventions for persons with SUD should enhance access to essential treatment and ideally reduce stigma.[9] In cases of SUD involving opioid dependence, telemedicine represents an innovation that could provide access to patients who need prescriptions for opioid agonist therapy (OAT).[7] Leppla and Gross[8] recommend careful navigation of these two crises, including increased access to social services, addiction psychiatry/psychology, and OAT (buprenorphine, naltrexone, and methadone).

This work showed that black or African Americans comprised higher percentages of ED patients presenting for overdose and higher percentages of overdose deaths in Period 3 compared with Period 1. As the opioid crisis continues to evolve at a rapid pace, multifaceted strategies need to be implemented that consider the needs of minority populations, who have historically been regarded as lower risk. Potential interventions could include efforts to increase awareness on the dangers of synthetic opioids and to expand treatment access for these individuals, including OAT.[10]

As public health stakeholders advance in the development and implementation of treatment strategies during this pandemic, we must not forget vulnerable populations such as individuals with SUD.[2] Innovative strategies can ensure that new challenges due to COVID-19 that face patients with SUD, who prior to COVID-19 already faced adversity, do not hinder access to quality treatment that can limit overdose deaths and optimize chances to recovery.[6]

Limitations

Limitations for this study include the setting of one academic trauma center and coroner data from one county (the most populated county in Kentucky, which ranks in the top 10 states for overdose deaths).[3] Additionally, we did not compare substance changes related to overdoses, which should be considered in future work. Due to the nature of the queries in the EMR for overdoses, some overdoses in the ED may have been overlooked. Further work by other hospital systems can examine how substance use, patient volume, and overdose diagnoses align with our work. Furthermore, we did not analyze over multiple years and did not test for statistically significant differences; we have only reported trend data during the three 16-week time periods.

Conclusion

Quality care of SUD patients should not be compromised as a result of COVID-19.[1] While we continuously implement measures to prevent transmission of the SARS-CoV-2 virus, we should concurrently provide timely and accessible addiction treatment for these vulnerable individuals.[1] We must stimulate and fast-track safe, quality treatment routes for persons with SUD to reduce the overall death toll of this pandemic in the United States.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper. The content and results have not been submitted and/or published elsewhere.

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