




Prevalence of Mental Health Disorders among Individuals Enrolled in an Emergency Response Program for Treatment of Opioid Use Disorder

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ABSTRACT

BACKGROUND: Psychiatric co-occurring disorders among individuals with opioid use disorder has primarily focused on epidemiological surveys of patients in continuous or long-term treatment, yet little is known about the socio-economically vulnerable who are non-treatment seeking prior to an emergency response.

METHODS: We retrospectively analyzed data from patients who had enrolled in a study involving home outreach to patients referred from police, emergency medical services (EMS), or hospital emergency departments following an emergency response. The sample is largely socio-economically vulnerable with high rates of unemployment and uninsured. Eligible consenting patients received an intervention consisting of medication (buprenorphine), behavioral counseling, and peer support. Participants completed semi-structured, psychological instruments to assess current and prior history for both substance use and mental health disorders. We used descriptive statistics to evaluate rates of co-occurring mental health comorbidity.

RESULTS: Among 102 patients (average age = 36.5 years old), approximately 61 (59.8%) reported a prior mental health diagnosis, with 31 (30.3%) currently on medications for their diagnoses. Mood and anxiety disorders were most frequently recorded. Just over half (51%) had received any prior treatment for their substance use. Of those with dual disorders, 67.2% had experienced prior suicidal thoughts, and 63.7% reported polysubstance use of 5 or more substances.

CONCLUSION: Co-occurring psychiatric disorders, and specifically mood and anxiety disorders, appear to be prevalent in vulnerable populations at an increased rate. Mental health assessments should routinely be performed in the emergency setting and in early stages of treatment.

KEYWORDS: Opioid, OUD, mental health, emergency department, dual diagnosis

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Introduction

The current drug epidemic is a public health emergency, and opioid-related overdoses were the primary cause of death in nearly 46,800 deaths in 2018.¹ Opioid use disorder (OUD) is associated with negative physical, psychological, and social consequences, as well as high rates of mortality,^{2–4} increased disability,² social stigma,^{5–7} and poor health outcomes.² Emergency department (ED) utilization is twice as high for individuals with substance use disorders (SUD)⁸ and co-occurring mental health conditions further increase ED utilization.² Moreover, individuals with OUD have the highest incidence of substance-related ED visits.⁷ Since 2001, opioid-related deaths have increased 345%⁹ and show no signs of slowing.¹⁰

OUD is associated with other comorbid psychiatric conditions.^{3,4,11} Prior research has shown that nearly one-third of patients with major depressive disorder also have substance use

disorders.¹² Individuals with OUD specifically are more likely to engage in high-risk behaviors, which put them at increased odds of adverse health outcomes.^{13,14} Individuals with OUD and a mental illness dual diagnosis are more likely to engage in polysubstance use and less likely to have psychological insight to their illness.¹⁵ The average diagnosis-treatment disparity for a mental health diagnosis is 10 years¹⁶ and co-occurring OUD can add decades to the treatment gap,¹⁷ exponentially increasing the risks of infections, blood-borne diseases, and unintended pregnancy. Additionally, patients with OUD and mental illness are less likely to enter treatment,^{17,18} or when enrolled, to complete treatment.¹⁹ Medications for opioid use disorder (MOUD) have been shown to be effective over placebos for treating OUD;²⁰ and promising results from several studies show that a psychiatric diagnosis can be associated with greater retention in office-based treatment for OUD.^{21–23}



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However, there are conflicting results for retention depending upon the enrollment site (community vs ED) and disease progression. Patients who have previous experience with buprenorphine, who are employed, and have stable housing are more likely to remain in community-based treatment.²³ Patients enrolled in treatment programs that included MOUD without behavioral health interventions and who were enrolled from the ED following a non-fatal overdose were less likely to be enrolled 30 days after initiation.^{24,25} Individuals with co-occurring OUD and mental illness are more likely to continue using nonprescription opioids,²⁶ have increased risk of chronic and acute physical illness,²⁷ and are at increased risk of accidental²⁸ and intentional overdose,^{29,30} thereby increasing opioid-related mortality.³¹

A bulk of research on adults with co-occurring OUD and mental health over the past decade is largely based on national epidemiological surveys,^{19,32-36} retrospective data analysis,^{2,37-39} or surveys of individuals in treatment.^{40,41} This exposes a potentially significant research gap in OUD and co-occurring mental health disorders, specifically among individuals who have entered treatment via an emergency response, but were not considered to be treatment seeking. Although mental health disorders often co-occur with OUD, emergency care of OUD generally focuses on the acute medical crisis and does not address underlying mental health conditions^{42,43} or provide assistance with accessing treatment services.⁴⁴ Moreover, the symptom expression for co-occurring mental illness may be affected by opioid intoxication or withdrawal,^{15,45} adding to the complexities of diagnosis.

Historically, substance use disorders have been treated as a criminal justice matter, and the magnitude of the opioid epidemic saw a shift from a criminal justice approach to a public health approach.^{46,47} More recently, substance use disorder and specifically OUD is now understood as a chronic disease that is impacted by psychosocial factors which require a comprehensive treatment approach,⁴⁸ however, the system of care is largely fragmented.⁴⁹ Emergency departments are not adequately equipped to manage mental health emergencies⁵⁰ and the opioid epidemic is increasing the burden on EDs to provide a solution.^{51,52} Individuals with mental health emergencies in the ED are triaged, stabilized, and released with a referral to community-based mental health services;^{49,50,53} and this treat-and-refer model has largely continued with SUD emergencies.⁴⁹ Although ED-initiated MOUD is a promising approach to addressing the opioid crisis,^{24,25} without prompt follow up with psychosocial services many patients fall through the cracks.⁴⁹

Previous research has reported the incidence of co-occurring serious mental illness among individuals with OUD to be anywhere from 26.9%³² and the co-occurrence of any mental illness as high as 75.6%.⁵⁴ While logical, the focus on urgent care and triage without addressing behavioral and mental health issues beyond the emergency may also contribute to the high rates of repeat overdoses. If there is a greater prevalence

rate of co-occurring mental health and opioid use disorder in these emergency populations, this information can guide evidence-based practice in emergency settings. The objective of this study is to assess the co-occurrence of both mental health and opioid use disorders in an emergency-based treatment program with a vulnerable population.

Methods

The study design was a retrospective analysis of data collected from semi-structured, psychosocial interviews by licensed counselors during intake in a community-based emergency response program. The program is located in a large metropolitan area, central to an academic medical center. Initial intake involved completion of a structured, psychosocial assessment designed to gather information on the presenting condition, medical and mental health history, family history, and social history. Counselors followed up with an interview consisting of both open-ended and closed-ended questions intended to gather pertinent information needed to establish care. Questions in the interviews included a list of substances currently used by the individual (e.g. non-prescription opioids, heroin, methamphetamines, crack cocaine) and questions related to prior mental health diagnoses (e.g. major depressive disorder, bipolar disorder, anxiety disorders). Complete lists found in Tables 2 and 3. Although some patients provided information peripheral to their diagnosis as part of the open-ended responses, individuals were not asked who gave them the diagnosis, or whether the diagnosis was given in an outpatient or inpatient setting. Our sample were adult (≥ 18 years of age) patients enrolled during April 2018 to September 2019 who undertook at least one counseling session. Participants were predominantly socio-economically vulnerable, with lack of stable housing, employment, or health insurance. Participants were generally at higher risk for a future overdose, due to either a recent non-fatal overdose or other emergent incident. Patients were referred into the program from either local EMS or police after a 911 call, or from 1 of 2 affiliated hospital emergency departments.

The Houston Emergency Opioid Engagement System (HEROES) is an emergency treatment program in Houston Texas, and the predominant pathway of enrollment involves trained and certified peer recovery coaches and a licensed paramedic conducting assertive outreach within 72 hours of an overdose event.⁵⁵ If willing and eligible, the individual enrolled in the program is offered expedited induction to approved medication for OUD (buprenorphine), individual substance use counseling, group therapy, and peer recovery coaching. The HEROES program partners with affiliated emergency medicine physicians and nurse practitioners who have been authorized by the Substance Abuse and Mental Health Services Administration (SAMHSA) to provide the patient with their initial induction to buprenorphine. Program staff then navigated and connected the individual to long-term medication

management and offered ongoing counseling and coaching services after stabilization, generally within 30 to 90 days. Additionally, participants were expected to attend weekly appointments for clinical counseling and attend at least 1 support group weekly. As a research study, all services were provided free of charge.

Baseline characteristics of the study population were examined calculating frequencies and proportions for categorical variables and means (with standard deviations) for continuous data. All analyses were performed using SPSS version 26 (IBM, Armonk NY), considering a 2-sided tails tests and a significance level of less than 0.05.

Participants provided written acknowledgment of receiving informed consent to participate in research prior to the collection of data. The study is registered as a national clinical trial (NCT 03396276). The study was approved by the Committee for the Protection of Human Subjects at the University of Texas Health Science Center at Houston.

Results

A total of 102 patients who completed the psychosocial assessments were included in the sample. Their age averaged 36.5 years, ranging from 21 years to 73 years ($SD = 9.5$) and were relatively equally distributed by gender, with 55 (54%) identifying as male. The majority of participants identified as white (80.4%). Fewer than half of the participants reported they were either married or in a long-term relationship. Nearly 65% reported a current state of temporary, homeless, or unstable housing, while a minority (35%) reported a more stable housing status of owning or renting their own home or apartment. The majority of respondents were uninsured, with 20 (19.6%) reporting any form of active health insurance, including Medicaid, Medicare, veterans' health care (for eligible veterans), or other commercial insurance. Half of the participants ($n = 53$, 52%) had received prior behavioral counseling for either substance use or mental health disorders and 55 (53.9%) reported a history of legal or criminal justice issues. Table 1 presents the baseline characteristics of participants.

Polysubstance use was prevalent, with over 93% reporting varying levels of polysubstance use. Thirty (29.4%) reported they used between 2 and 4 substances, and 65 (63.7%) reported using 5 or more substances. Only 7% stated that they used only one substance. The most concurrently used substances reported by respondents were alcohol (95.7%), marijuana (87.2%), followed by cocaine (85.9%), and nicotine (84.8%). All participants received a positive urine drug screen for opioid metabolites, with a large proportion of respondents reporting use of non-prescription opioids (81.5%) in addition to heroin (77.4%), hallucinogens (63%), methamphetamines (59.8%), benzodiazepines (57.6%), and crack cocaine (54.3%). Table 2 summarizes polysubstance use history of the individuals in the study.

Table 1. Baseline patient characteristics.

	TOTAL (N = 102)
Age, years, mean \pm SD	36.5 \pm 9.5
Gender, male, %	55 (53.9)
Race/ethnicity, %	
White/non-Hispanic	68 (66.7)
White/Hispanic	14 (13.7)
African American/Black	15 (14.7)
All other/unknown	5 (4.9)
Marital status	
Married	18 (17.6)
Single	43 (42.2)
Partnered	22 (21.6)
Divorced/Separated	19 (18.6)
Health insurance	20 (19.6)
Housing status	
Homeless	8 (7.8)
Temporary housing (lives w/friend or family)	45 (44.1)
Unstable, other	13 (12.7)
Own/rent home	36 (35.4)
Prior counseling or treatment	53 (52.0)
Legal or criminal justice issues	55 (53.9)

Abbreviation: SD, standard deviation.

A majority of individuals ($n = 61$, 59.8%) in the study reported a current or prior lifetime psychiatric diagnosis. Of those with a mental health diagnosis, 21 (34.4%) reported they had anxiety disorder, followed by 20 (32.8%) with bipolar disorder, and 15 (24.6%) with major depressive disorder. Other diagnoses reported included attention deficit hyperactivity disorder and schizophrenia. There were 42 respondents with mental health diagnoses (67.2%) who also reported experiences of suicidal ideations. Table 3 summarizes lifetime mental health diagnosis history of patients.

Discussion

In this study, we found evidence of high rates of co-occurring mental health diagnoses, high rates of suicidal ideations, and elevated polysubstance use. This sample represented non-treatment seeking and socio-economically vulnerable individuals who were referred into our program from either local EMS or police after a 911 call, or from an affiliated hospital emergency department. Although prior research agrees on high rates of dual diagnoses, there have not been useful estimates of the

Table 2. Reported polysubstance use.

SUBSTANCE(S)	N= 102	% OF TOTAL
Single substance only	7	6.9
Polysubstance use	95	93.1
2-4 substances	30	29.4
≥5 substances	65	63.7
Most used substances		
Alcohol	98	95.7
Marijuana	89	87.2
Cocaine	88	85.9
Nicotine/tobacco	86	84.8
Non-prescription opioids	83	81.5
Heroin	79	77.4
Hallucinogens	64	63.0
Methamphetamines	61	59.8
Benzodiazepines	59	57.6
Crack cocaine	55	54.3
Non-prescription comb. (Bup/Naloxone)	47	45.7
Amphetamines	38	37.0
Non-prescription methadone	26	25.0
Barbiturates	23	22.8
Inhalants	16	15.2

Table 3. Reported lifetime mental health diagnoses (n = 102).

MENTAL HEALTH DIAGNOSIS	N	% OF TOTAL	% OF MH DIAGNOSIS*
No prior diagnosis	41	40.2	–
Mental health diagnosis	61	59.8	100
Anxiety disorder	21	20.6	34.4
Bipolar disorder	20	19.6	32.8
Major depressive disorder	15	14.7	24.6
ADHD	11	10.8	18.0
Schizophrenia	4	3.9	6.6
Suicidal Ideations	42	41.2	67.2

Abbreviation: ADHD, attention deficit hyperactivity disorder.
 *Numbers may not total to 100% due to multiple diagnoses.

expected prevalence in certain subgroups of individuals with OUD. Our research suggests that among individuals who are

considered high-risk (by nature of a recent overdose or incident involving police, EMS, or the ED), 60% have dual diagnoses or comorbidity between OUD and mental health disorders. A detailed analysis of the concurrent comorbidities affecting a population of non-treatment seeking individuals through the conventional channels but accessing emergency care has not been investigated. We found this subgroup present with a pattern of high-risk substance use, including polysubstance use, and important socio-economic vulnerability. Due to the vulnerable nature of our study population, it is reasonable to expect that participants in our study would present with a significant proportion of mental health comorbidity. Our results support the expectation of a mental health comorbidity and additionally capture an important number of individuals reporting a professional diagnosis. This is noteworthy, because it illustrates the high prevalence of dual disorders in a vulnerable population that may not have entered OUD treatment without an emergency intervention.

Individuals who utilize the ED for routine treatment tend to be uninsured or underinsured, or have public health insurance, such as Medicaid.⁵⁶ The majority of our population was uninsured and more than half were homeless. Even with Medicaid, individuals with comorbid mental health and OUD face significant barriers to accessing community-based treatment. Nationally, opioid-related deaths are increasing; however, access to free or low-cost treatment programs is incongruent to the needs of individuals with OUD⁵⁶⁻⁵⁸ and barriers to Medicaid reimbursement leave the most vulnerable populations reliant on ED-initiated services.^{56,59}

Consistent with other research, this sample showed anxiety and mood disorder diagnoses were more frequently observed than other diagnoses, supporting previous studies on co-occurring substance use and mental health disorders.³² Although there is an abundance of research on SUD and mental health comorbidity, most research to date specifically examining opioid use disorder and co-occurring mental health diagnoses has specifically focused on different subgroups of populations (e.g. inpatient treatment, criminal justice, population surveys)^{60,61} or already registered in a SUD treatment program.^{36,40,41}

There have been prior studies estimating the prevalence of dual diagnoses. Kidorf et al.⁴⁰ found that 48% of individuals who injected opioids had a dual mental health diagnosis. Another study conducted by Jones and McCance-Katz³² during the year 2019, estimated the prevalence of mental illness with OUD closer to 64% for *any* mental illness combined with OUD, while *serious* mental illness prevalence with OUD was approximately 27%. Our findings were in line with those studies, however, we may have found evidence of more serious mental illness as previously described, based in our findings of overdoses triggering an emergency intervention and the prevalence of reported suicidal ideations. In addition, we found that over half of the individuals in our study had prior counseling or treatment for mental health and less than one-third were

currently taking medications for those diagnoses. On average as reported during the year 2017, 1 in 5 adults in the U.S. experience at least one mental illness each year.⁶² These findings suggest that many with OUD experience mental health problems but remain undiagnosed and therefore untreated. Behavioral health interventions have shown to increase patient engagement in substance use disorder treatment;⁶³ therefore, assessment for undiagnosed mental illness following an overdose may result in better treatment initiation rates.

Additionally, previous research has established that individuals with OUD and co-occurring mental illness are more likely to engage in high-risk behaviors, such as polysubstance use.¹⁵ Our study of high-risk persons with OUD confirmed high rates (93%) of polysubstance use, with 63.7% of participants using 5 or more substances. Similarly, our study showed much higher alcohol use (96%) among individuals with OUD than other studies, which have reported between 18.8%⁶⁴ and 29%;³² and also, higher marijuana use (87%) whereas other studies have shown between 9%⁶⁴ and 16%.³² Finally, a significant portion of our participants reported using methamphetamines (60%) compared to 7%³² and hallucinogens (63%) compared to <1%.⁶⁴ Other research has reported nicotine use at between 29%⁶⁴ and 42%,³² whereas 85% of our study participants reported nicotine use. Overall, the participants in our study were at-risk across multiple domains including their social, behavioral, and physical environments, with 80% having no form of health insurance, and approximately two-thirds were homeless or in temporary or unstable housing.

Psychiatric comorbidity complicates SUD treatment and can lead to relapse if left untreated.¹⁶ Similarly, substance use often changes the course of psychiatric disorders and can affect symptom expression.⁶⁵ Behavioral health interventions that are more personalized, or individualized have demonstrated to be more effective than general support-group settings at increasing attendance and abstinence rates.⁶³ Evidence from this study suggests that treatment for OUD and mental health comorbidity should also focus on psychiatric diagnosis, rather than solely offering general addiction treatment services. Timely assessment of overdose survivors can offer insight or confirmation on co-occurring mental health disorders and perhaps help overcome emotional or cognitive barriers to treatment.

Finally, this research supports the need for novel interprofessional and integrated services to help the hard-to-reach populations who may not have access to healthcare services that offer treatment options. Through the Drug Addiction Treatment Act of 2000, medical providers can obtain certification waivers to allow them to prescribe buprenorphine to treat OUD, yet research from 2019 showed nearly 5.5% of the U.S. have no access to a DATA-waivered provider and 19% of all counties with 10 or more overdose deaths had no treatment programs.⁶⁶ Significantly more research needs to explore mechanisms for integrating dual diagnosis treatment for individuals, especially following a recent opioid overdose.

This study is not without limitations. First, the small sample presents a limitation to generalization of our findings, although prior research is supportive of our results. Second, this study relied on patient-self report of mental health diagnosis by a health provider to the study counselor and therefore may be subject to selective memory or recall bias. We did not have access to medical records from prior attending physicians. This however is consistent with most research using psychosocial instruments and interviews. This study did not differentiate between illegally obtained and prescription opioids nor did it differentiate between chronic use versus episodic opioid use. Finally, only those overdose survivors who were willing to both enroll into treatment and engage in counseling were included in our study. Selection bias may or may not account for differences between those who were willing to participate and those who were not.

Conclusion

Co-occurring psychiatric disorders, and specifically mood and anxiety disorders, are prevalent and occurred at a high rate in our study of OUD population who are vulnerable individuals at an increased risk for a relapse and overdose. More routine mental health assessments, and additional funding or reimbursement for these assessments, should be considered within the emergency setting and in early stages of treatment.

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Author Contributions

TCL and CBB developed the concept for this study and collected all data from participants. All authors contributed to the first draft. MCT and JL analyzed the data and edited the final draft of the manuscript. CBB and TCL were involved in the revision process for publication.

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