Posttraumatic stress disorder in people who use drugs: syringe services program utilization, treatment need, and preferences for onsite mental health care

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Abstract

Background Syringe services programs (SSPs) are critical healthcare access points for people with opioid use disorder (OUD) who face treatment utilization barriers. Co-locating care for common psychiatric comorbidities, like posttraumatic stress disorder (PTSD), at SSPs may reduce harms and enhance the health of individuals with OUD. To guide the development of onsite psychiatric care at SSPs, we collected quantitative survey data on the prevalence of PTSD, drug use patterns, treatment experiences associated with a probable PTSD diagnosis, and attitudes regarding onsite PTSD care in a convenience sample of registered SSP clients in New York City.

Methods Study participants were administered the PTSD Checklist for the *DSM-5* (PCL-5) and asked about sociodemographic characteristics, current drug use, OUD and PTSD treatment histories, and desire for future SSP services using a structured interview. Probable PTSD diagnosis was defined as a PCL-5 score ≥ 31.

Results Of the 139 participants surveyed, 138 experienced at least one potentially traumatic event and were included in the present analysis. The sample was primarily male ($n = 108$, 78.3%), of Hispanic or Latinx ethnicity ($n = 76$, 55.1%), and middle-aged ($M = 45.0$ years, $SD = 10.6$). The mean PCL-5 score was 35.2 ($SD = 21.0$) and 79 participants (57.2%) had a probable PTSD diagnosis. We documented frequent SSP utilization, significant unmet PTSD treatment need, and high interest in onsite PTSD treatment.

Conclusions Study findings point to the ubiquity of PTSD in people with OUD who visit SSPs, large gaps in PTSD care, and the potential for harm reduction settings like SSPs to reach people underserved by the healthcare system who have co-occurring OUD and PTSD.

Keywords Substance use disorders, Psychiatric comorbidity, Harm reduction, Integrated posttraumatic stress disorder and substance use disorder care, Opioid-related overdose

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Background

Posttraumatic stress disorder (PTSD) develops after experiencing or witnessing a traumatic event such as an assault, rape, or disaster. Symptoms include re-experiencing the traumatic event, avoiding trauma reminders, negative alterations in mood and thought, and heightened arousal and reactivity [1]. PTSD is one of the most common psychiatric comorbidities in people who use drugs (PWUD) with prevalence estimates ranging between 21% and 40% [2–5]. From a risk environment framework [6], this disproportionately high PTSD rate can be understood as a product of the social situations and structures PWUD inhabit (e.g. drug economy involvement, housing policies, and policing practices that increase the likelihood of exposures to potentially traumatic events [7]). PTSD among PWUD independently confers a two-fold risk of experiencing a non-fatal overdose [4] and predicts a higher risk of drug and sexual practices linked to HIV acquisition and transmission [8].

PTSD frequently co-occurs with opioid use disorder (OUD) and their comorbidity intensifies the burden of each disorder. In comparison with those living with only OUD, PTSD is associated with greater severity of OUD symptoms, polydrug use, higher likelihood of comorbid depression and attempted suicide, and poorer physical and mental health [9]. It is also well-documented that PTSD complicates the process of engaging in care for OUD [10, 11]. While PWUD living with comorbid PTSD report greater interest in OUD treatment than PWUD not living with PTSD, the frequency of engaging in OUD treatment does not differ between these groups [12, 13]. This suggests that PWUD living with PTSD may recognize their need for OUD care but face unique barriers to treatment. These barriers might arise from PTSD symptoms themselves, such as intrusive memories, avoidance, and emotion dysregulation, which together may make navigating complex health systems, tolerating long waiting times, and enduring stigma particularly difficult [2, 14]. Engagement in the conventional health care system for OUD care is, therefore, challenging for individuals with comorbid PTSD and OUD.

Structural barriers also prevent PWUD from accessing traditional sites for PTSD care. Identifying and accessing specialists can be challenging, availability of specialized PTSD care remains limited outside of the Veterans Administration system [15], and PWUDs are commonly subjected to stigma in their interactions with the healthcare system [16, 17]. One way to simplify access to PTSD care for this population is to integrate its provision with OUD care. Concurrent and integrated care models for PTSD and substance use disorders have demonstrated effectiveness [18], yet widespread adoption remains very limited [15]. Co-locating PTSD care within OUD treatment programs or prescribing buprenorphine treatment at a specialized mental health clinic are examples of integrated care. However, these models have been developed and tested in traditional outpatient and academic hospital centers, which are difficult for many PWUDs to access [19, 20]. Thus, alternative models of care delivery outside of specialized healthcare settings will likely be necessary to reach PWUD who live with PTSD.

Syringe services programs (SSPs) represent promising, novel venues for integrated OUD and PTSD treatment. SSPs effectively reach PWUD who may infrequently use conventional sources of healthcare. SSPs engage PWUD by working from a harm reduction framework that actively counteracts stigma, makes minimal demands on clients to access care, and prioritizes building client trust [21–24]. SSPs are widespread throughout the U.S. with more than 400 operating in 43 states, Washington, DC, and Puerto Rico [25]. In addition to providing sterile syringes and injection equipment, SSPs offer a range of health and social services that include vaccinations, HIV/HCV testing and care, and linkage to substance use disorder treatment [26]. With the 2020 lifting of an in-person examination requirement for buprenorphine initiation, 24% of SSPs currently offer onsite buprenorphine initiation via telehealth [27]. Single-site trials of this low-threshold approach to OUD care have shown preliminary effectiveness [28, 29]. The feasibility of locating specialized, integrated, "low-threshold" psychiatric care at SSPs, however, is unknown.

Despite the lack of effectiveness data, about 15% of SSPs in the U.S. reported offering onsite mental health counseling in 2020 [30]. To most effectively expand this strategy to integrate evidence-based PTSD care with low-threshold OUD services at SSPs, we sought to answer several questions. First, what is the prevalence of PTSD in the SSP setting? Second, how much OUD and PTSD care do SSP clients already receive at traditional treatment sites or onsite at SSPs? Finally, would integrated OUD and mental health care at SSPs be desired by SSP clients? We explored these questions among registered SSP clients recruited in New York City (NYC). Research has consistently shown that there are higher rates of psychiatric diagnoses, including PTSD, in PWUD than in the general population [3]. We thus expected to find elevated rates of trauma and PTSD and significant unmet PTSD treatment needs in this sample of SSP clients. Additionally, we hypothesized that a provisional PTSD diagnosis would be predictive of lower OUD, PTSD, and SSP services utilization [2, 13, 31]. Our question about attitudes toward mental health care onsite at SSPs was exploratory.

Methods

Participants and procedure

We recruited a convenience sample from three SSPs in NYC between June 2021 and March 2022. Recruitment

occurred in-person at the SSPs and through SSP staff referrals. Eligibility criteria were being a registered SSP client, being over 18 years of age, and self-report of an OUD diagnosis. A research team member conducted a brief screening interview to establish eligibility. All SSP clients encountered by the research team at the SSPs who met eligibility criteria were invited to participate in the study. Those who provided oral consent were administered a 30-minute survey by a trained research staff member. Surveys were completed in person in a private office at the SSP or via telephone in either English or Spanish. Participants received $20 in cash as compensation. The Einstein College of Medicine Institutional Review Board approved the study.

Measures

Trauma exposure and PTSD symptomatology
We used the Life Events Checklist for the *DSM-5-Extended Version* to assess lifetime exposure to potentially traumatic events (LEC-5-EV; [32]). The LEC-5-EV presents 16 event types and, for each type, asks respondents to identify the type of exposure (e.g., personally exposed, witnessed exposure, heard about exposure) and the timing of the exposure (within the last 6 months), and then asks respondents to provide brief characteristics regarding the worst event. LEC-5-EV responses were used to establish the presence of a traumatic stressor (PTSD Criterion A).

PTSD symptoms were measured using the PTSD Checklist for *DSM-5* (PCL-5; [33]), a widely used, psychometrically validated, self-report questionnaire [34]. The PCL-5 consists of 20 items that align with the 20 *DSM-5* PTSD symptoms and measures symptom severity in the past month. Respondents rate each item on a five-point Likert-like scale (0 to 4). When there is an endorsement of a potentially traumatic event, a PCL-5 score of 31 or greater has been demonstrated to be a robust indicator of probable PTSD diagnosis [35]. Thus, we categorized people who endorsed a potentially traumatic event as having none to low PTSD symptoms (PCL-5 < 31), and having probable PTSD (PCL-5 ≥ 31).

Drug use
Participants self-reported their alcohol and drug use using an adapted version of the Drug/Alcohol Use section of the Addiction Severity Index [36]. Data included the number of days that they used the following drugs, respectively, in the last 30 days: alcohol, amphetamines, benzodiazepines, cannabis, cocaine, heroin/fentanyl, methadone, buprenorphine, other opioids/analgesics, and synthetic cannabis or K2. For each drug with at least one day of use reported, participants then identified their usual route of administration and, for methadone, buprenorphine, opiates/analgesics, benzodiazepines,

and amphetamines, participants reported whether the drug was prescribed to them. We collected information on lifetime opioid-related overdose, which was defined as "being unresponsive or unable to be woken up, waking up in a hospital or ambulance, collapsing or losing consciousness, having difficulty breathing, or having blue skin due to heroin, fentanyl, or another opioid."

Prior OUD treatment, PTSD treatment, and unmet treatment needs
We asked participants, "In your lifetime, what opioid use disorder treatments have you used?" Participants then reported whether they had received each of seven different types of OUD treatment, respectively (yes/no). Treatment options were "Detoxification" (i.e., medically managed withdrawal services), "Outpatient program with groups or one-on-one counseling," "Inpatient or residential program," "Methadone treatment," "Buprenorphine or Suboxone treatment," "Naltrexone treatment," and "Mutual aid groups (Alcoholics Anonymous and/or Narcotics Anonymous)." If participants answered yes to receiving a treatment, they were then asked the number of episodes in which they had participated in that treatment.

We collected information about mental health treatment history using an adapted version of the Psychiatric Status section of the Addiction Severity Index [36]. We added the question, "Has a health professional ever diagnosed you with a psychological or emotional problem?" and if so, "What was/were the diagnosis(es)"? Data collected included the number of times participants were treated for any psychological or emotional problems, the setting of care (e.g. hospital/inpatient and outpatient), how many treatment episodes included PTSD treatment, and recency of PTSD-related care (e.g. in the past six months or longer).

SSP utilization and future service preferences
We asked participants about their utilization of SSPs and the various services offered at SSPs. The first question asked about the frequency of visiting the SSP in the past month. The next set of questions asked about the past 30-day utilization of specific services, including individual mental health counseling, group mental health counseling, psychiatric medication visits, medications for OUD, and OUD counseling. The last set of questions asked about services that participants would like to receive onsite at an SSP in the future.

Other information
Data were also collected regarding age, gender (male, female, transgender, or gender non-conforming), ethnicity (Hispanic/Latinx or not), and health insurance status.

Data analysis

We first identified participants who endorsed a potentially traumatic event in the LEC-5 and described the traumatic events reported for those with probable PTSD as measured by the PCL-5. We then categorized individuals with potentially traumatic events based on their report of past-month PTSD symptoms (PCL-5≥31 [probable PTSD]) versus PCL-5<31 [low PTSD symptoms]). We compared participants who had probable PTSD with those who had low PTSD symptoms on sociodemographic characteristics, drug use behaviors, OUD and mental health treatment histories, SSP utilization histories, and desired SSP services. Data were analyzed using IBM SPSS Statistics, version 29 [37]. We report means and standard deviations for continuous variables and proportions for categorical variables and assess the statistical significance of the difference between the two groups on each measure using t-tests and chi-square tests.

Results

A total 139 participants completed the study. One hundred and thirty-eight people reported at least one potentially traumatic event in their lifetime and were included in the analyses that follow. The mean PCL-5 score in the sample was 35.2 (SD=21.0). Seventy-nine people (57.2%) had a PCL-5 score of ≥31 and 59 people (42.8%) had a PCL-5 score of <31. Table 1 summarizes the event types of lifetime trauma exposure of those with a PCL-5 score≥31 (probable PTSD).

Table 1 Trauma event types endorsed by 79 registered SSP clients with a probable PTSD diagnosis in New York City

Potentially traumatic event types endorsed on the LEC-5 (happened to me)	*n* (% of 79)
Physical assault	58 (73.4)
Assault with a weapon	47 (59.5)
Transportation accident	45 (57.0)
Severe human suffering	38 (48.1)
Serious accident	29 (36.7)
Natural disaster	33 (41.8)
Other very stressful event or experience	32 (40.5)
Life-threatening illness or injury	28 (35.4)
Witnessing a sudden violent death	26 (32.9)
Sexual assault	25 (31.6)
Unwanted/uncomfortable sexual experience (other than sexual assault)	24 (30.4)
Fire or explosion	21 (26.6)
Witnessing a sudden accidental death	17 (21.5)
Combat or war-zone exposure	14 (17.7)
Serious injury/harm/death you caused to other(s)	16 (20.3)
Toxic substance exposure	11 (13.9)
Captivity	3 (3.8)

Note. LEC-5: Life Events Checklist for *DSM-5*; PTSD: posttraumatic stress disorder; probable PTSD diagnosis = PCL-5 ≥ 31; SSP: syringe services program

The mean age of the sample was 45.0 years (SD=10.6). Most of the participants were male at birth (n=108, 78.3%). Over half reported being of Hispanic or Latinx ethnicity (n=76, 55.1%). Black (n = 49, 35.5%) and White (n = 49, 35.5%) were the most commonly reported racial categories. The majority reported having health insurance (n=129, 93.5%). The most commonly used drugs were heroin or fentanyl (M=17.83 [SD=13.1] days per month), cocaine (M=16.0 [SD=13.3] days per month), and alcohol (M=5.3 [SD=9.7] days per month).

Comparisons between those with PCL-5 score≥31 and those who had a PCL-5 score<31 demonstrated that significantly more participants with probable PTSD reported any mental health diagnosis (n=66, 83.5% vs. n=35, 59.3%, χ^2 [1]=10.10, p<0.01), a known PTSD diagnosis (n=32, 40.5% vs. n=10, 16.9%, χ^2 [1]=8.85, p<0.01), and having ever received PTSD treatment (n=38, 48.1% vs. n=18, 30.5%, χ^2 [1]1=4.34, p=0.04). Participants with probable PTSD were also more likely to report prior opioid overdose (n=52, 85.8% vs. n=29, 49.2%, χ^2 [1]=3.87, p<0.05). Table 2 shows demographic characteristics and drug use behaviors.

Table 3 compares the utilization of SSP services and future desire for onsite SSP services by level of PTSD symptom severity. Most (59.5%) participants with probable PTSD visited the SSPs at least daily and this was not statistically significantly different from participants with low PTSD symptoms (χ^2 [1]=3.23, p=0.07). A minority of participants in each group had received onsite mental health or OUD treatment services at SSPs, but the majority of participants in each group desired for these services to be available at the SSPs.

Discussion

SSPs effectively reach and engage PWUD [38] who are frequently marginalized from traditional healthcare outlets [39, 40]. SSPs may further serve as linchpin venues for improving the health of individuals with OUD by addressing psychiatric comorbidities like PTSD. In our NYC sample of SSP clients with a history of OUD and current drug use, trauma exposure was pervasive (99.2%). We found a high prevalence of probable PTSD (57.2%). Additionally, there was a high burden of PTSD symptoms in the sample as a whole, even among those who did not meet the criteria for probable PTSD. We also documented gaps in PTSD-specific care and participant interest in receiving PTSD treatment delivered onsite at SSPs.

The magnitude of trauma exposure and elevated rate of probable PTSD in our study were expected, indicative of the cumulative burden among individuals served by SSPs. Other research has shown that, compared with PWUD who do not use SSPs, those accessing SSPs carry greater structural- and individual-level vulnerabilities (e.g., housing instability, injection drug use practices, co-occurring

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Table 2 Demographic characteristics, drug use behaviors, and past OUD and mental health treatment of 138 registered SSP clients with a history of OUD and trauma exposure in New York City by PTSD symptom severity

Sociodemographic characteristics	Probable PTSD *n* (% of 79)	Low PTSD symptoms *n* (% of 59)	*p*-value
M (*SD*) age	45.6 (11.0)	44.2 (10.2)	0.44
Hispanic or Latinx	40 (50.6)	36 (61.0)	0.23
Any health insurance	72 (91.1)	57 (96.6)	0.20
Male gender	59 (74.7)	49 (83.1)	0.24
Drug use characteristics			
M (*SD*) days/past 30 days			
Alcohol	5.8 (10.1)	4.7 (9.1)	0.51
Cocaine	16.7 (13.5)	15.0 (13.1)	0.46
Heroin/fentanyl	17.9 (13.4)	17.7 (12.8)	0.92
Other opioids	3.1 (7.6)	1.4 (4.8)	0.13
Benzodiazepine	4.6 (9.0)	5.3 (9.7)	0.65
Injected drugs, ever	50 (63.3)	46 (78.3)	0.06
Opioid-related overdose, ever	52 (65.8)	29 (49.2)	< 0.05*
Prior OUD treatment			
Detoxification	63 (79.7)	49 (83.1)	0.62
Counseling	53 (67.1)	42 (71.2)	0.61
Inpatient/residential	62 (78.5)	39 (66.1)	0.10
Methadone (*n* = 134)	55 (71.4)	42 (73.7)	0.77
Buprenorphine	33 (41.8)	26 (44.1)	0.79
Naltrexone	4 (5.1)	3 (5.1)	< 1.00
Narcotics or Alcohol Anonymous	60 (75.9)	33 (55.9)	0.01*
Prior mental health treatment			
Diagnosis, any	66 (83.5)	35 (59.3)	0.001**
Diagnosis, PTSD	32 (40.5)	10 (16.9)	0.003**
Outpatient	49 (62.0)	26 (44.1)	0.04*
Inpatient	44 (55.7)	21 (35.6)	0.02*
PTSD treatment, ever	38 (48.1)	18 (30.5)	0.04*
PTSD treatment, past 6 months	17 (21.5)	7 (11.9)	0.14

Note. SSP: syringe services program; OUD: opioid use disorder; PTSD: posttraumatic stress disorder; probable PTSD = PCL-5 ≥ 31; low PTSD symptoms = PCL-5 < 31; * = *p* < 0.05; ** = *p* < 0.01

Table 3 SSP service utilization and preferences of 138 registered SSP clients with a history of OUD and trauma exposure in New York City by PTSD symptom severity

Utilization of SSP Services	Probable PTSD *n* (% of 79)	Low PTSD symptoms *n* (% or 59)	*p*-value
Frequency, visit at least daily	47 (59.5)	26 (44.1)	0.07
OUD treatment			
Counseling	21 (26.6)	15 (25.4)	0.88
OUD medications	12 (15.2)	12 (20.3)	0.43
Mental health treatment			
Counseling, individual	31 (39.2)	15 (25.4)	0.09
Counseling, group	24 (30.4)	10 (16.9)	0.07
Medication	13 (16.5)	6 (10.2)	0.29
Desire for onsite SSP services			
OUD treatment			
Counseling	60 (75.9)	38 (64.4)	0.14
OUD medications	53 (67.1)	42 (71.2)	0.61
Mental health treatment			
Counseling, individual	65 (82.3)	43 (72.9)	0.19
Counseling, group	57 (72.2)	37 (62.7)	0.24
Medication	55 (69.6)	33 (55.9)	0.10

Note. SSP: syringe services program; OUD: opioid use disorder; PTSD: posttraumatic stress disorder; probable PTSD = PCL-5 ≥ 31; low PTSD symptoms = PCL-5 < 31

stimulant use, street-based income, and sex-work involvement) that increase the likelihood of violence and health-related harms [5, 41, 42]. However, the prevalence of probable PTSD in our sample (57.2%) was even greater than has been reported in prior work with SSP-referred methadone clients. In a sample of newly-enrolled methadone clients referred from a Baltimore SSP, Kidorf et al. [3] found that 21% met *DSM-IV* criteria for PTSD. This lower rate may reflect sampling differences between studies. If PTSD symptoms interfere with treatment seeking, then SSP clients who successfully engage in methadone treatment may have fewer PTSD symptoms than clients who do not.

There were three other main findings. Firstly, a significant proportion of SSP clients had unmet PTSD treatment needs. Among people with a probable PTSD diagnosis, 40.5% reported a prior PTSD diagnosis and only 48.1% reported PTSD treatment in the past. As expected, the endorsement of prior PTSD treatment by those with PTSD symptoms that fell below the diagnostic cut-off was significantly lower than for those in the probable PTSD group. The lack of treatment in those with low PTSD symptoms warrants concern because, despite not meeting diagnostic criteria, subthreshold levels of PTSD carry substantial functional impairments [43, 44]. In light of evidence that untreated PTSD can stall efforts to treat substance use disorders [10, 13, 45], untreated PTSD observed in this study stands as a modifiable barrier to OUD treatment engagement in this high-need population and merits critical attention.

Second and relatedly, in our study, probable PTSD was associated with lifetime endorsement of having had an opioid-related overdose. This result mirrors the findings of a recent study conducted with a large Vancouver cohort of PWUD [4] and earlier work with PWUD in rural Appalachia [46]. Our study further supports the possibility that PTSD-related distress may privilege avoidant coping, reinforce opioid use, and impede adaptive help-seeking behaviors [47, 48]. This is an especially pernicious effect for individuals with OUD who already face significant drug-related harms.

Lastly, people with probable PTSD reported receiving services at the SSPs and they appeared to desire additional mental health and OUD treatment services there. Other data demonstrate that SSP clients trust and have supportive relationships with SSP staff, which contrasts with their experiences seeking care in traditional healthcare settings [16, 19, 21]. Indeed, most in our sample reported using SSP-based healthcare services. These findings run counter to the perception that marginalized PWUD are resistant to or do not want treatment [17]. Efforts to seek and engage fully in treatment can be impaired by PTSD symptoms, but provider- and systems-level barriers to PTSD care may also limit service usage.

Our findings suggest the strong possibility that onsite PTSD care at SSPs will be acceptable to its clients—if delivered in a fashion consonant with the person-centered, destigmatizing ethos of harm reduction organizations [23, 49].

Delivering PTSD care in low-threshold settings like SSPs would likely involve multidisciplinary coordination and require increased resources, but prior evidence suggests that it can be done. PTSD treatments have demonstrated efficacy when delivered in a variety of low-resource settings where exposure to adversity and violence may be chronic and ongoing [50–52]. The availability of providers with specialization in the evidence-based treatment of PTSD may be another limitation. However, gold-standard PTSD care has been effectively adapted for delivery through telehealth [53]. Integrating pharmacotherapy with harm reduction behavioral approaches such as those espoused by SSPs has been studied in the context of low-threshold, supportive housing. Randomized controlled trials of naltrexone in combination with harm reduction psychotherapy have shown success with individuals who are experiencing chronic homelessness and live with severe alcohol use disorder [54, 55]. Thus, developing low-threshold models of PTSD and OUD care appears to be warranted.

Our findings carry several implications related to mental health service provision to PWUD at SSPs. From a therapeutic perspective, our results confirm the importance of adopting a trauma-informed approach when designing and implementing health services to PWUD. Beyond an understanding of trauma-specific interventions, a trauma-informed approach recognizes the impact of trauma upon the individual and takes into consideration these experiences in the present context of care [56]. The harm reduction principles that guide SSP service provision already dovetail substantially with a trauma-informed approach that prioritizes client's safety, transparency, collaboration, and empowerment [57]. On a public health level, our results suggest that SSPs serve a population of PWUD with substantial PTSD burden who are interested in receiving mental health care and willing to doing so in the SSP context. Together, these findings underscore the potential role that SSPs can play in bridging the mental health treatment gap in PWUD [58] and the benefits of increasing the availability of SSPs in the US equipped to deliver onsite psychiatric services. As first steps, barriers currently limiting the funding for SSPs and their equitable coverage in the US [59] must be addressed as well as the training and educating of mental health care professionals in harm reduction principles. There can sometimes be cultural differences between health care providers and harm reduction practitioners, therefore integrating psychiatric services into SSPs will require substantial cultural humility [60]. Rigorous

research is critical; to the best of our knowledge, no research or evaluation of onsite SSP screening and treatment for PTSD have been conducted.

The strengths of our study include our ability to reach PWUD, a validated PTSD screening instrument, and trained research staff to assist in survey completion. Our study also has limitations worthy of note. Firstly, our sample size was constrained by physical distancing precautions implemented during the COVID-19 pandemic. As a convenience sample from a large metropolitan area, our findings may not generalize to other types of SSP settings such as smaller-city and rural-serving SSPs. Relatedly, obtaining a true estimate of PTSD prevalence at SSPs would involve more systematic sampling procedures to accurately account for subpopulations in the SSP setting potentially underrepresented here (e.g., women, transgender individuals, and people with housing insecurity). Because this study focused exclusively on PTSD symptomatology we are unable to shed light on the presence and associations of other psychiatric disorders known to be elevated in the population who use SSPs [3, 61]. Moreover, PTSD is also highly comorbid with a range of mood, anxiety, and personality disorders [62]. Future work is tasked with systematically documenting the full extent of psychiatric burden, psychosocial needs, and unique preferences of people who utilize SSP services.

Conclusion
Amid a historic rise in U.S. drug overdoses [63] and the persistent underutilization of evidence-based OUD treatments [58], novel access points are critically needed to engage and retain individuals with OUD in treatment. One such possibility involves offering integrated OUD and psychiatric care in venues trusted and frequented by PWUD. Our study documented high rates of PTSD in individuals with self-reported OUD who currently utilized SSPs in NYC, unmet need for PTSD treatment, and strong interest in SSP-based PTSD care. These findings support the design of co-located PTSD services that are responsive to the needs, preferences, and harm reduction context of SSPs and the communities of PWUD they serve.

Abbreviations
PTSD	Posttraumatic stress disorder
PWUD	People who use drugs
OUD	Opioid use disorder
SSPs	Syringe services programs
NYC	New York City
LEC-5-EV	Life Events Checklist for *DSM-5*-Extended Version
PCL-5	PTSD Checklist for *DSM-5*

Author contributions
TLC designed and managed the study. LR, GB, EO, and MG substantially contributed to the data collection. TLC, NS, and AF conceptualized the data analysis and interpreted the data. NS conducted the data analyses. TLC, NS, and AF wrote and reviewed the manuscript. All authors read and approved the manuscript.

Declarations

Ethics approval and consent to participate
Study was reviewed and approved by the Einstein College of Medicine Institutional Review Board.

Competing interests
The authors declare no competing interests.

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