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"You don't have the right resources to let it hurt": How structural vulnerabilities shape opioid withdrawal experiences among a community sample of people who inject drugs in Los Angeles, California

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Abstract

Among people who inject drugs and use opioids, the vast majority have reported experiencing opioid withdrawal symptoms during the past six months. People who use opioids experience significant impediments from withdrawal symptoms, including increased risk behaviors associated with overdose, bloodborne infection, and other negative health outcomes. We undertook this analysis to understand how social and structural forces shaped experiences of withdrawal risk, navigation, and management among a community sample of people who use opioids and inject drugs in Los Angeles, California. We conducted 30 semi-structured, in-depth interviews at community sites in Los Angeles. Qualitative data were analyzed using constructivist grounded theory. Our findings indicate that: 1) when people who use opioids experienced overlapping structural conditions (such as unsheltered houselessness and material difficulty) withdrawal becamea vulnerability and was prioritized first 2) severe material hardships necessitated that participants prioritized withdrawal to engage in their daily income generation activities, 3) participants engaged in higher risk behaviors in order to manage intense and urgent withdrawal symptoms, which led to shifts towards stigmatized and criminalized identities and negative self-appraisal. Overlapping structural vulnerabilities such as housing insecurity, material hardship, experiencing theft, and financial precarity compress risks associated with withdrawal while simultaneously constricting ways in which individuals can manage symptoms. Our findings point to ways in which existing withdrawal management options may be made more effective and accessible via structural support such as housing, income, and basic needs support. MOUD expansion may empower people who actively use opioids to navigate complex structural vulnerabilities from a place of assurance rather than urgency and fear; thereby serving as a harm reduction tool that disrupts the cycle of withdrawal management and material precarity.

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Introduction

Opioid withdrawal

In a community recruited sample of people who inject drugs, 85% reported experiencing opioid withdrawal in the past 6 months. 35% reported withdrawal symptoms on a weekly basis, the majority of whom stated experiencing very or extremely painful symptoms [1]. Beyond being a cause of pain and discomfort, opioid withdrawal syndrome can be life-threatening [2], and onset occurs when an individual who is dependent on opioids reduces or stops using opioids [2]. People who use opioids (PWUO) have reported frustration at the minimization of withdrawal symptoms in the public health discourse as "flu-like" when the actual experience is intensely debilitating [3, 4]. Qualitative studies on opioid withdrawal show that people who use opioids report experiencing extreme physical discomfort, associated immobility [5], and dysphoria [3]. Case studies of acute psychosis due to opioid withdrawal have also been documented [6, 7]. People who use opioids report a wide range of experiences associated with withdrawal that extend beyond symptomology including pre-emptive anxiety [3, 5] and hopelessness [8]. A lack of empathy from clinicians in medical settings has also been reported [5]. These factors have contributed to urgent, and often described as desperate, efforts by PWUO to prevent withdrawal [3, 5, 8].

Withdrawal is a risk factor for multiple negative health outcomes. At least one study directly links withdrawal experience to increased risk of non-fatal overdose [1]. Qualitative data show that people who use opioids self-medicate with non-prescribed medication for opioid use disorder (OUD) such as methadone and buprenorphine to manage cravings and withdrawal symptoms [9, 10]. Increased fentanyl penetration into drug markets has shortened withdrawal onset durations, increased severity for people who use opioids, and established withdrawal as a driver of risk-involved behavior [3, 11–13].

People who use opioids have a disproportionate rate of patient-directed discharges that have been linked to inadequate treatment of withdrawal symptoms further contributing to the risks of unmanaged and undermanaged health conditions [5, 14–16], hospital readmission [17], and death [18]. Available evidence indicates that in addition to amplifying potential overdose risk behaviors, withdrawal may contribute to people who use opioids avoiding healthcare settings [5], and that fears of experiencing withdrawal can lead to delaying or avoiding treatment for skin and soft tissue infections [5]. Additionally, fear of precipitated withdrawal prevents people who use fentanyl from initiating buprenorphine treatment, while actively experiencing symptoms increases risk of discontinuation of treatment [8]. Withdrawal symptomology may cause individuals to deprioritize harm reduction practices (e.g. skin cleaning, being prepared with injection materials before injecting, and using new syringes) due to the urgent need to alleviate symptoms [19].

Structural vulnerability in community samples of people who use opioids

Structural vulnerability refers to an individual's 'positionality' within the wider social order [20]. The vast majority of people who inject drugs and who access services at community-based syringe service programs (SSPs) are socially disadvantaged and rely on government services to meet basic needs [21]. Los Angeles County is at the intersection of coinciding public health emergencies including the housing crisis [22–25], hyper-incarceration, the overdose death crisis, material deprivation including Water, Sanitation, and Hygiene (WaSH) insecurity [26], food insecurity [27, 28], and violent victimization [29, 30]. For people who inject drugs who access services in community settings, the intersection of existing vulnerabilities – homelessness, poverty, and/or material needs insecurities – combined with structural conditions in Los Angeles (such as changes in the drug market [31], government enforced displacement i.e. "sweeps" and so on) reshapes substance use-related risks such as non-fatal overdose, occurrence of withdrawal symptoms, and violent victimization [25, 31, 32].

Through a qualitative study of how people who inject drugs are positioned – by their ability to access resources like money, safe(r) and known substances, and so on – structural vulnerability provides a frame for examining the processes by which social location and negative health outcomes, such as withdrawal, intersect to shape substance use-related "risk" behaviors [33]. Accordingly, we undertook this analysis to understand how social and structural forces shaped experiences of withdrawal risk, navigation processes, and management among this community sample of people who use opioids and inject drugs in Los Angeles, California.

Methods

Data collection: community engaged research

Parent cohort study

This research was part of a longitudinal, prospective cohort study to determine if changes in cannabis use frequency are associated with changes in frequency of opioid use and opioid-related health outcomes among opioid-using people who inject drugs recruited in community

settings in two states with legal medicinal and adult cannabis sales and use. The methods of this cohort study are described in greater detail elsewhere [34]. For this study, we conducted interviews with a subsample ($n=30$) of the parent cohort participants. Self-reported, computer-assisted survey data from the Los Angeles site of the longitudinal, prospective cohort study was abstracted and analyzed via SPSS version 29.0.2.0 [35] to provide descriptive statistics on sociodemographic characteristics, substance use and injection practices, medication for opioid use disorder (MOUD) utilization, structural vulnerability factors self-reported by participants ($n=30$) (Tables 1, 2 and 3). Relevant demographic information from the Los Angeles sites ($N=223$) of the parent cohort study are as follows: participants were largely male (75%) and most were White (42%) followed by Latinx (38%), Black (8%), Asian and Pacific Islander (2%) and those who identified as other (6%) [36]. Half (50%) of the participants in LA made less than $1,000 per month, three quarters (75%) were unhoused or unstably housed [36], and a majority (70%) experienced opioid withdrawal in the last 3 months. Additional data on demographic information of participants recruited at the LA sites can be found in published literature elsewhere [36].

Study team

The investigative team for the qualitative study consisted of faculty and PI (RNB), co-I (RCC), recruitment lead (KDG), doctoral students (SSG, JLG, RPS), master's students, research staff (EEG), and undergraduate research assistants. The faculty member and PI (RNB) has worked with community-based organizations including the study sites for over 25 years. RNB had long-standing relationships with two of the community sites involved in the study. His relationship with two of the programs began in 2000 (CDC funded study R6/CCR918667 from 2000 to 2004) and has continued to collaborate with them. His relationship with the community site in Denver was new but based on long-time awareness of his work and his awareness of that program. All community

Table 1 Sociodemographic, housing status, and opioid withdrawal in the past 3 months among people who use cannabis and opioids in Los Angeles, California 2021–2022

Pseudonym	Gender	Race/Ethnicity	Monthly Income	Housing Status*	Opioid Withdrawal*
Lucas	Male	White	$2,101 or more	Homeless or Unstably Housed	Did Not Experience Withdrawal
Devin	Female	Other	Less than $1,000	Homeless or Unstably Housed	Did Not Experience Withdrawal
Bailey	Male	Native	$1,401 to $2,100	Stably Housed	Experienced Withdrawal
Mateo	Other	Latinx	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal
Avery	Male	Native	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal
Alexis	Female	Latinx	Less than $1,000	Stably Housed	Did Not Experience Withdrawal
Ro	Male	Latinx	$2,101 or more	Stably Housed	Experienced Withdrawal
Kimberley	Female	Latinx	$1,401 to $2,100	Stably Housed	Experienced Withdrawal
Toby	Male	White	Less than $1,000	Homeless or Unstably Housed	Did Not Experience Withdrawal
Olivia	Female	Latinx	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal
David	Male	Latinx	Less than $1,000	Stably Housed	Experienced Withdrawal
William	Male	White	$2,101 or more	Stably Housed	Did Not Experience Withdrawal
Alexander	Male	Latinx	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal
Ryan	Male	White	$1,401 to $2,100	Homeless or Unstably Housed	Experienced Withdrawal
Leon	Male	White	$2,101 or more	Stably Housed	Experienced Withdrawal
Donna	Female	Asian	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal
Carol	Female	White	$1,000 to $1,400	Stably Housed	Experienced Withdrawal
Graham	Male	White	$2,101 or more	Homeless or Unstably Housed	Experienced Withdrawal
Emma	Female	White	Less than $1,000	Stably Housed	Experienced Withdrawal
Marc	Male	Other	Less than $1,000	Homeless or Unstably Housed	Did Not Experience Withdrawal
Josh	Male	Other	$1,000 to $1,400	Homeless or Unstably Housed	Experienced Withdrawal
Richard	Male	White	$1,401 to $2,100	Homeless or Unstably Housed	Experienced Withdrawal
Isabella	Female	White	$1,000 to $1,400	Stably Housed	Did Not Experience Withdrawal
Paul	Male	White	$2,101 or more	Homeless or Unstably Housed	Did Not Experience Withdrawal
Edward	Male	Latinx	$1,401 to $2,100	Homeless or Unstably Housed	Experienced Withdrawal
Jeremy	Male	Latinx	$2,101 or more	Stably Housed	Did Not Experience Withdrawal
Timothy	Male	White	$1,401 to $2,100	Homeless or Unstably Housed	Experienced Withdrawal
Joseph	Male	Black	$2,101 or more	Stably Housed	Did Not Experience Withdrawal
Keith	Male	White	$2,101 or more	Stably Housed	Experienced Withdrawal
Benjamin	Male	Black	Less than $1,000	Homeless or Unstably Housed	Experienced Withdrawal

*In the Past 3 Months

Table 2 Substances and medication for opioid use disorder (MOUD) used, substance use behaviors, and substance use treatment engagement in Los Angeles, California 2021–2022

Variable	*N* (%)
Substance use	
Types of substances used in the past 3 months	
Heroin	23 (76.7%)
Fentanyl	19 (63.3%)
Speedball	12 (40.0%)
Goofball	20 (66.7)
Other non-prescribed opioid	6 (20.0%)
Sedative	2 (6.67%)
Tranquilizer	11 (36.67%)
MOUD/Treatment	
Types of medication for opioid use disorder (MOUD) or substance use disorder (SUD) used in the past 3 months	
Methadone	1 (3.3%)
Buprenorphine	2 (6.67%)
Vivitrol/naltrexone	0
Program enrollment status in the last 3 months	
Any treatment	10 (33%)
Methadone detoxification	1 (3.3%)
Methadone maintenance	6 (20%)
Buprenorphine detox	3 (10%)
Buprenorphine maintenance	1 (3.3%)
Outpatient without medication assisted treatment (MAT)	1 (3.3%)
Inpatient hospital	0
Residential without medication assisted treatment (MAT)	0
Tried to get into treatment but were unable to	1 (3.3%)
Currently enrolled in treatment	0 (0%)
Injection related behaviors	
Average number of times a new syringe is re-used (by self) before discarding	
1 time	22 (73.3%)
2 times	4 (13.3%)
3 times	1 (3.3%)
4 times	0
5 times	2 (6.7%)
6 times	0
7 times	1 (3.3%)
Times used a syringe used by someone else in the past 3 months	
0 times	25 (83.3%)
1 time	5 (16.7%)
Times of rushed injections in the past 3 months	
0 times	14 (46.7%)
1–4 times	6 (20.0%)
5–9 times	3 (10.0%)
10–14 times	1 (3.3%)
20 or more times	6 (20.0%)

partners reviewed study protocol as well as reviewed and approved study questionnaires. RNB shared preliminary results with community sites and invited them to comment. They were also invited to suggest topics that should be covered to adjust data collection strategy. RNB remains in contact with each program and provides support and advice to programs upon request.

A NIDA Diversity Supplement Postdoctoral Researcher at the time of the study and now a faculty member at USC (RCC), designed the qualitative study, conducted interviews, and is involved in community-engaged research examining cannabis use during pregnancy. Our recruitment team in Los Angeles was led by research staff (KDG) with 10 + years of community-engaged research experience with our partner sites and other service providers in Los Angeles. Depending on the specific study site, we partnered with community members to reach out to participants via street-based outreach. Community-engaged research engages under-studied and underrepresented samples to co-generate – with community members and organizations – insights and interventions that are relevant to participants' lived experiences [37]. Members of the recruitment team (SSG, JLG) had prior experience working in community settings such as clinics

Table 3 Structural vulnerability among people who use cannabis and opioids ($n=30$) in Los Angeles, California 2021–2022

Domains of Structural vulnerability	Items*	*N* (%)
Housing	Unhoused/unstably housed	8 (26.7%)
	Forced to move by the government	
Food access	Experiencing some degree of difficulty finding food to eat	10 (33.33%)
Education	Graduated from high school or have a GED	6 (20%)
Legal Status	Any contact with private security guards	10 (33.33%)
	Any contact with the police	6 (20%)
	Been arrested	1 (3.3%)
	Been on probation	5 (16.67%)
	Been on parole	2 (6.67%)
Habitus	Had belongings stolen in the past 3 months	23 (76.7%)
	Threatened with knife, gun or weapon in the past 3 months	8 (26.7%)
	Punched, slapped, kicked or physically hurt in the past 3 months	6 (20.0%)
	Had knife, gun, club or weapon used against you in the past 3 months	2 (6.7%)
	Had physical force or threat of force used to coerce sex in the past 3 months	1 (3.3%)
	Had stranger attack on the streets in the past 3 months	5 (16.7%)

*In the past 3 months unless otherwise specified

and outreach programs in California. Study members had collected data from community samples (EEG) and/or worked in community settings outside of California (RPS).

Participant recruitment procedures

Participants in the parent cohort study were approached as potential participants in this qualitative study when they returned for follow-up. The investigative team partnered with two sites for recruitment:. Research staff (KDG and CJP) worked with community partners at both study sites to put together a list of eligible participants from the pool of those seeking services at an SSP and near the MOUD clinic. Research staff (KDG and CJP) shared this list with one member of the research team who conducted interviews (RCC). RCC reached out to them numerous times in-person as well as by phone call, text, and email to schedule and the site administrative staff continued to support setting up interviews throughout data collection by staying in contact with RCC and identifying names of eligible individuals when they came to the study sites for services.

Our team had collected data with the same and/or similar community partners and settings in the past and accordingly, we had sociodemographic data showing that clients served at the partner study sites were largely unhoused and underserved [38–42]. Participants in similar community samples in Los Angeles and other parts of California [43–45] also experience overlapping socio-structural conditions such as unsheltered houselessness, material needs insecurities, and poverty. We communicated with SSP outreach staff who informed participants that researchers were present at the site to conduct a survey (for the parent study) or an interview (for the qualitative subsample). Our team recruited and interviewed 30 opioid-using people who inject drugs ($n=30$) out of the parent cohort. Eligibility for the qualitative study included (1) being 18 years of age or older, (2) any opioid and cannabis use, and (3) self-reported injection drug use within the past 30 days, which was confirmed by visual inspection of injection sites [46].

Semi-structured interviews

Qualitative data were collected via in-person, semi-structured, in-depth interviews between July 2021 and April 2022. After participants provided informed consent, the co-I (RCC) conducted 45–60-minute semi-structured interviews regarding patterns, preferences, and experiences of opioid and cannabis use. Study procedures were reviewed and approved by the University of Southern California IRB (approval number HS-18-00624). While interviews were broadly focused on patterns of opioid and cannabis use, we used a semi-structured interview guide (Appendix 1: Interview guide) with a non-directive and open-ended approach to explore and elaborate on unanticipated topics introduced by the participant [47]. Interviews for this study were audio recorded and transcribed verbatim by a third-party IRB-approved transcriptionist. The analytic team (SSG, EEG, RCC, and research team members) read, summarized, and memoed all transcripts to develop a collaborative codebook (Appendix 2: Codebook). The transcripts and codebook were uploaded into ATLAS.ti™ data software program, Mac Version 22.1.0 for analysis [48].

Data analysis: constructivist grounded theory

We used constructivist grounded theory (CGT) to identify and compare withdrawal-related themes across interviews and to construct a conceptual explanation of how people who use opioids navigated withdrawal experiences [47].

Coding, memoing, and sorting data

The codebook consisted of names of the codes (e.g., *"Using cannabis/opioid to mitigate withdrawal symptoms","Setting up a system for cannabis/opioid use")* and descriptions. It was iteratively revised for the first five interviews based on researcher discussions and our understanding of the codebook. Our CGT analytic process consisted of incident-by-incident memoing, researcher triangulation, and reflexive discussions [34]. The core of this analysis was generated from our memos on 'structural vulnerability' which emerged from two aspects of the CGT method. First, the use of non-directive and open-ended interviewing and second, co-writing and developing memos through researcher triangulation during analytic discussions. Despite the interview guide being largely aimed at understanding patterns of cannabis and opioid use, recruiting participants in community settings such as an SSP and via street-based outreach combined with our methodological approach to understanding how participants make meaning out of actions and circumstances resulted in rich data pertaining to interactions between withdrawal and structural contexts, namely, homelessness, poverty, and violent victimization. We used CGT to understand participants' social and structural contexts due to its processual focus [49–51] by co-writing and developing memos that we refined over the course of the analysis period. This analysis emerged from data within codes such as "U*sing cannabis/opioid to mitigate withdrawal symptoms*", "*Setting up a system for cannabis/opioid use*", "*Planning finances around use*" and in response to the item: "*Do you feel like people in healthcare get it wrong? Is there anything you wish you could tell people in healthcare?*" from our interview guide.

Theoretical development

In Constructing Grounded Theory, Charmaz explains that while grounded theory itself consists of both positivist and interpretive theoretical inclinations, CGT is a part of the interpretive theoretical tradition [47] (2006). Aligned with this interpretive tradition, our objective was to understand withdrawal experiences among people who inject drugs by examining patterns and connections. A core element of interpretive theory central to our analysis is the processual examination of social life; this allowed for emergence and synthesis of insights on withdrawal management, day-to-day routines, and how they are mutually reinforcing and tied [47] (Charmaz, 2006). Interpretive theory facilitates analysis of emergent and multiple realities, furthering our examination of perspectives that appear cyclical and contradictory yet contribute to our understanding of the complexities of withdrawal management. In accordance with this method, our focus was to understand how and why people who inject drugs engaged in substance use practices and actions before, during, and after withdrawal within the structural, economic, and social contexts of their living experience. We did this to meaningfully analyze how participants in this sample constructed their view of reality as shaped by overlapping conditions such as houselessness, poverty, material hardship, and violence. We then examined how this shaped actions such as identifying and prioritizing vulnerabilities and the order in which they are addressed, for what purposes, and self-reflections on actions over a lifetime. We generated three theories about a shared phenomenon — experiences of opioid withdrawal — among people who use opioids and inject drugs in our sample using this method. These included how sociostructural conditions shaped experiences of withdrawal, the role of material hardship in managing withdrawal, and how PWUO reflected on behavioral shifts related to withdrawal.

Results

Sociodemographic characteristics of the analytic sample ($n = 30$) are included in Table 1. Additionally, data on substance use and behaviors, MOUD utilization and treatment engagement is in Table 2. More than half the sample (56.7%) was unhoused or unstably housed, a third (66.7%) reported experiencing opioid withdrawal, around a quarter (26.7%) were forced to move by the government, and a majority (76.7%) reported having belongings stolen, in the past 3 months.

Result 1: when people who use opioids experienced overlapping structural conditions (such as unsheltered houselessness and material difficulty) withdrawal becomes a vulnerability and is prioritized first

Participants described how structural conditions such as unsheltered houselessness and material hardship, criminal-legal involvement, and violent victimization complicated their ability to implement known withdrawal management plans. For participants in this study, withdrawal itself may not have been a vulnerability; however, when contextualized within other structural vulnerabilities experiencing unmanaged withdrawal could impose severe risks such as physical harm, assault, and death. Therefore, participants prioritized withdrawal first while navigating multiple overlapping material hardships. For Donna, being unhoused and not having the financial resources to purchase opioids lead to weekly withdrawal symptoms:

> *"I [use heroin] every chance I would get to get it. Cause I don't have my own place so it's kind of hard to do all of that and my money situation is not where I want it to be either because I'm always broke so I'm just trying to figure out [how] I'm going to get well… [I have been in withdrawal]…at least every week.*

Because… when that guy took all my shit, he took everything that was in my purse, tossed my purse empty with just some random stuff in there. He took my cigarettes I just bought. My torch, so I didn't even have a lighter. He took all my money, everything. So, it was really messed up when it happened, I've been struggling a lot more." (Donna; 31, female, Asian, unhoused).

In Donna's case, theft and violent victimization were facets of unsheltered houselessness that negatively shaped her ability to consistently rely on and/or access material resources (such as money, cigarettes, and lighters), all of which might aid withdrawal management. Even when she had sufficient finances to purchase substances and use supplies, there was a very real risk that these would be stolen. These overlapping vulnerabilities are then exacerbated leaving her with no way to manage withdrawal.

After having her belongings, supplies, and, importantly, money stolen, Donna explained how in times of financial precarity, withdrawal management became a higher priority than spending money to meet any other needs. However, theft, and other forms of victimization left Donna to change her withdrawal management plans, especially as they pertained to allocating her already sporadic and limited financial resources:

"[W]hen I do have some money then I'm able to get more [heroin], so it'll be cheaper…in the long run. And then if not, then I have to buy smaller amounts and it's more expensive that way. So, it's more of a struggle because then I'm not going to be able to keep up with it." (Donna; 31, female, Asian, unhoused).

Experiencing unsheltered houselessness increased Donna's risk for victimization as well as financial and material precarity. While buying larger quantities of opioids was less expensive, Donna had to consider factors such as whether she had the money to do so and the significantly higher possibility of theft from living outside. On the other hand, smaller amounts were more expensive, required her to purchase regularly and worsening her existing financial precariousness. During these times, being in withdrawal was the most pressing vulnerability, and she prioritized it as such.

Benajmin used fentanyl as he did not want to experience withdrawal while being unhoused:

"But fetty [fentanyl], I mess with every day since I started using fentanyl in 2019. I have not moved without fentanyl since then'cause without it, I would be sick. I wouldn't be able to function. So I have to. But then again, when you think about it logically, you don't have to. You just don't do it and, it's gonna hurt, but that's what's messed up out here because you don't have the right resources to let it hurt. You don't want to feel like that out here [on being unhoused]" (Benjamin; 33, Black, male, unhoused).

The paucity of resources to mitigate the discomfort of withdrawal (i.e., safe places where he wouldn't be at risk of harm, theft, or relocation) prompted Benjamin to use fentanyl for withdrawal management and functioning. Importantly, he noted that the hostile conditions from unsheltered homelessness exacerbated risks associated with debilitating withdrawal symptoms to such a degree that he felt unable to even experience withdrawal symptoms and instead required daily management via fentanyl. Under Benjamin's circumstances, daily fentanyl use to prevent withdrawal was necessary to prevent greater risks.

Graham had to go through greater intensity and duration of withdrawal due to his time at county jail:

"I wake up sick every morning. So, I start smoking [fentanyl]. I smoke right away. As soon as I wake up, I have to smoke or it's terrible. It's a terrible feeling. It's like having the worst flu ever. Probably a lot similar to like Covid, but like 20 times worse, except you won't die. That's why I try never to be sick. That's why it's so hard for people to get off. Last time I was sick is when I went to the county jail…they kept me there for 16 days, I was still sick after 16 days. I could not believe it." (Graham; 31, white, male, unhoused).

Graham woke up in withdrawal every day and managed it by smoking fentanyl. He previously had a painful withdrawal experience due to being unable to access either preferred substances or MOUD while in county jail. Despite the severity of symptoms he related, these supplies (or other medical intervention) were not provided. He explained how the severity of his withdrawal symptoms, likely amplified by hostile conditions such as being unhoused and/or in the county jail, were a key driver of his continued opioid use.

Participants felt that with greater structural support such as financial aid and insurance coverage, they would be better able to manage withdrawal. For instance, Edward pointed out how insurance and other forms of material support could positively disrupt the cycle of needing to make money to manage withdrawal:

"I could do a program, I'd go into a detox, but if it was pain management, and I knew it would help, it'd be a lot easier for me to not relapse, to stay and put in the extra effort. And it's also the idea insurance is paying for my fentanyl use right now, I'm gonna put more effort into my life just because

they're helping me out. I can put more effort in what I'm doing rather than having to worry about making cash today so I can go get what I need to stay well." (Edward; 35, Latinx, male, unhoused).

Edward felt that with additional social and structural support (i.e., financial benefits from insurance coverage, access to treatment facilities) he would be both more prepared and motivated to discontinue and/ or alter his use patterns. Despite his desire for this, amidst precarious financial circumstances, his energy was entirely directed towards avoiding withdrawal and generating an income, leaving him without the capacity to seriously engage with these efforts.

Participants noted how hostile structural conditions and resource paucity increased the necessity, urgency, and importance of managing withdrawal symptoms. Unsheltered houselessness, loss of belongings and money, and lack of material support intensified the existing risk of withdrawal. Notably, the sudden and random disruptions to participants' daily lives, especially their finances, impeded their ability to successfully plan and act on their withdrawal management routines. Earlier, Donna who was trying to "get back on [her] feet" illustrated how these fluctuations were destabilizing. Further, participants noted that whilst there may be conditions in which withdrawal may be more manageable, their current circumstances did not allow for this as they were characterized by resource limitations and built environments that did not permit them to be vulnerable to the experience of withdrawal symptoms. In these circumstances, withdrawal itself becomes an additive and amplifying vulnerability for people who use opioids. More information about structural vulnerabilities such as housing, food access, education, legal status, and habitus in this sample are included in Table 3.

Result 2: severe material hardships necessitated that participants prioritize withdrawal to engage in their daily income generation activities

Participants needed to manage withdrawal to meaningfully engage in daily income generation activities (such as recycling or "hustling") due to existing severe material hardship. Most participants described needing to plan and engage in money making tasks daily to mitigate looming financial insecurity, had income levels of less than $2,101 per month, and had multiple sources of income over the last 3 months. These included illegal or possibly illegal sources of income (50%), welfare, food stamps, and GAGR (45%), paid employment (30%), SSI/ retirement (26%), unemployment (20%), SSDI (10%), support from friends (16%), and family and/ or spousal support (10%). One participant reported none of these sources of income.

Participants described how financial precarity and material hardship shaped decision-making around prioritizing withdrawal management within daily routines. They detailed past experiences of withdrawal disrupting daily routines and the ensuing complications with necessary activities such as reporting to work. Because of this, participants detailed careful routines centering preferred substances to manage both withdrawal symptoms and daily necessities. Material hardship necessitated urgency in addressing existing withdrawal and related vulnerability to enable money-making routines.

Carol managed withdrawal symptoms to maintain functionality throughout the day and facilitate money-making routines by injecting opioids upon waking in the morning before attempting to source her income:

"[W]hen I wake up that's what I do, a shot, and then I go and try and get money… then four to six hours later if I'm preoccupied with something like trying to get money recycling… I remember… I gotta do a shot because I start getting sick. And it's either cramps in my stomach or my legs or something that'll remind me." (Carol; 48, white, female, housed).

Carol typically made money recycling, which was one of the more common income generation activities that participants in our study and the larger cohort participated in. She was prompted to manage her symptoms when withdrawal-related cramps interrupted her while recycling. Carol underlines how the temporal aspects of managing withdrawal (every 4 to 6 h in her case) while disruptive of activities are deeply intertwined with day-to-day lives and timelines.

Disruptive withdrawal symptoms such as frequent vomiting impeded David's ability to work:

"I've always had a job, I've always worked. I tried working on Suboxone, and… I feel sick throughout the day, like literally I'm fucking throwing up… fuck the fucking Suboxone, I'm just gonna fucking stay on heroin." (David; 35, Latinx, male, housed).

David found that in his circumstances, Suboxone® (buprenorphine and naloxone) alone was insufficient to manage withdrawal symptoms. David did not have the desired experience with Suboxone® and chose to stay on heroin because of this. Since we did not learn about his dosage or use protocols, the emphasis here is on how David prioritized managing his withdrawal symptoms in order to work. Upon realizing that he still felt symptomatic throughout the workday, David used opioids to ensure that he could keep working and remain employed.

Benjamin was unable to do everyday tasks when in withdrawal, which was not a viable state to experience amidst severe material hardship:

> *"I won't be able to complete the daily tasks without doing [opioids], because I won't want to do it. I'll be all sweaty, I'll be all clammy, and irritated, and just not a person that people want to be around." (Benjamin; 33, Black, male, unhoused).*

Benjamin had multiple streams of income which he used to share expenses with his girlfriend and partially financially support his grandmother. He was unable to pursue these money-making endeavors if he was debilitated by withdrawal, which would leave both himself and multiple other important people in his life in a more precarious position. Further, his interpersonal relationships would suffer if his withdrawal needs were not met because he disliked his responses and reactions to other people when experiencing distressing symptoms. Benjamin also had to return home multiple times throughout the day to attend to withdrawal symptoms as he was uncomfortable using substances while exposed on the streets. He had to account for this within this routine alongside his other efforts as his current financial circumstances necessitated ongoing engagement with money-making rather than allowing for breaks to manage his well-being or physical space to do so outside of his staying location.

Joseph started his morning routine with daily tasks necessary to mitigate financial precarity. He needed to complete these before withdrawal set in while considering the impact of symptoms on his ability to carry out desired activities if he experienced any schedule shifts:

> *"[I]f I want to eat and live and have my drugs, I have to go out and make money. I have to go out and work… I wake up. And I'll see what I need to do and I'll try to get that done… sometimes if I slept too long, I'll wake up. And I can't even get out of bed, basically, before I do a shot. But most of the time, I'll try to get shit done… and it's kind of like my reward." (Joseph; 37, Black, male, housed).*

For Joseph, financial precarity and material hardship was the driving force behind the need to manage withdrawal. He had multiple sources of income over time, due to ongoing thoughts of how he would make money to manage daily withdrawal.

Withdrawal symptoms affected participants' ability to complete daily tasks as well as interrupted their ability to engage in income generation activities for long periods and engage in close relationships with people around. At the same time, a vast majority of the sample was financially insecure and needed to manage their immediate withdrawal symptoms to procure money. Daily routines had built-in plans to address symptoms immediately as they arose to avoid debilitation. In this way, participants found that while withdrawal symptoms disrupted their ongoing activities, they were predictable; this led to the development of routines that prioritized withdrawal management in order mange financial and material insecurity.

Result 3: to manage intense and urgent withdrawal symptoms, participants engaged in higher risk behaviors which led to shifts towards stigmatized identities and negative self-appraisal

Most participants in this study had been using substances for long periods of time and felt less positive about themselves over the course of their substance use trajectories. While self-reflecting upon behavioral shifts during withdrawal, participants attributed these changes to the combined effects of forces beyond their immediate control (structural, environmental, interpersonal circumstances), withdrawal, and substances themselves. Some behavioral shifts included actions taken to procure substances for withdrawal management that eventually led to isolation and social distance from friends, family, and community. Withdrawal also played a role in precipitating changes in routes of administration and types, formulations, and dosing of opioids. Despite the various overlapping circumstances, participants often internalized the stigmatized behaviors and appraised themselves, their actions, and behaviors negatively.

Participants recounted how avoiding withdrawal symptoms damaged relationships by engaging in relatively 'higher risk' behaviors in addition to feeling out of control and disconnected with their actions. Severe and enduring consequences such as criminal-legal involvement further compounded their existing risks and difficulties. Leon echoed others in emphasizing the various ways in which social isolation and opioid use were intertwined:

> *"[Withdrawal] changes your habits. It can make you do things to avoid sickness. I've done things that broke my family's heart, going to prison a couple times, and I stole some money from them on occasion when I was super hard up… There's things that can't be undone. I can only do better in the future if I want to maintain a relationship with any family or any relationships. Opiates tend to isolate people." (Leon; 46, White, male, housed).*

Leon regretted the ways in which his habits and actions shifted over a period of time to avoid withdrawal symptoms. He reflected on various shifts in close relationships due to actions such as stealing money so that he could manage withdrawal. He identified needing to "do better,"

underlining impacts on negative self-appraisal from the combined effects of long-term patterns of use, behavioral shifts, and public policies related to drug criminalization.

Leon had experienced serious and significant criminal-legal involvement. He recounted how he had been incarcerated for long periods of time on charges related to drug possession, emphasizing that drug criminalization took away a significant portion of his life:

> *"[People in the healthcare system] get wrong, [by] criminalizing [opioids], I did pretty much all my 30s on small drug charges, and I got locked up for it. Like a 10-dollar bag of heroin, I did three years. Another 10-dollar bag of heroin, I did another three years. And these were when the drug laws were bad. I think where people get it wrong is criminalizing…I think drug charges are blown out of proportion for the most part." (Leon; 46, white, male, housed).*

In Leon's case, behavioral changes (stealing to manage withdrawal symptoms) and criminal-legal consequences served to make him even more vulnerable by further isolating him from his family and social network.

Marc preferred heroin at one point and did not want to switch to fentanyl, but the fear of withdrawal made it harder to continue using heroin when his partner insisted on transitioning to fentanyl:

> *"I was an avid heroin user. I wasn't going to switch to fentanyl. Then [my partner] switched from heroin to fentanyl. And he was dead set against buying two different drugs, like fentanyl and heroin. He told me either you're going to smoke fentanyl or you're not going to do it. And I didn't want to be dopesick. Because [being] dopesick terrifies me. I hate dopesick." (Marc; 30, Other, male, unhoused).*

In this instance, despite Marcs' preference for and intention to keep using heroin, he was unable to continue using it. He depended on his partner for procuring opioids. When his partner insisted on only buying fentanyl, he felt as though he did not have a choice but to also transition to fentanyl use due to intense fear of withdrawal symptoms. Later, he was unable to return to heroin because heroin did not adequately manage his withdrawal symptoms and was too expensive given his altered tolerance from fentanyl use. Marc self-identified as an "avid heroin user" yet found himself transitioning to fentanyl use while two complex and dynamic circumstances played out in the background: first, the transition within the illicit opioid market from heroin to fentanyl that likely shaped his partner's decision to use, purchase, and switch to fentanyl and second, his relationships dynamics with his partner who procured opioids for both of them. Amid these, preventing withdrawal symptoms, described by Marc and other participants as intensely fear-inducing, urgent, and requiring immediate attention, became the deciding factor for the transition. Marc's circumstances illustrate that while withdrawal in itself is a risk, when added in to the mix with other factors, both structural and interpersonal, withdrawal compounds existing risks and is prioritized due to the urgency and severity of its onset.

Joseph was not able to go home and visit his family out of state because of his fear of being outed as a person who uses opioids. The physical dependence and potential for withdrawals also made it hard to travel without heroin:

> *"[W]hen I very first started doing this, I [didn't] think I'd become chemically dependent on it… I went home and I had been doing heroin, but I was trying [to hide it]…now, I just don't go home. People tell me that they're sneaking [heroin] on airplanes… but that has me terrified. If any of my family or friends ever found out that I was fucking doing heroin… They wouldn't believe it at first… 'Cause it's not something that is prominent in the Black community at all." (Jospeh; Black, 37, male, housed).*

Joseph was from the South and had moved to Los Angeles as an adult. He described a range of considerations in his decision to not return home including the physical dependence and as a Black person who uses heroin. As heroin was not prominent in the Black community, he felt if anyone found out he would be stigmatized for it. Upon looking back, he emphasized how in preempting the stigmatization and potential for negative reactions he was further isolating himself from his family and the Black community after he started using heroin.

Keith experienced his first withdrawal episode after running out of Oxycodone pills that he received from a clinician. Due to the pain of withdrawal symptoms, he transitioned from prescription oxycodone pills to smoking black tar heroin:

> *"Somehow it just happened. I also had a really good job. And then one time I ran out and I experienced my first withdrawal. It was insane. And I guess from that point, I had this neighbor, and I knew that he was an opiate addict… when I was running out of Oxy [precription Oxycodone] I was puking and hurting crazy… I couldn't make it to the bathroom, so I started puking out the window. And I saw him walking by so I ran out in my socks and I was like,'Yo, dude, I need you to help me out. Can I get some opiates?'… he got me some. That's when I smoked tar for the first time." (Keith; 34, white, male, housed).*

Keith asked his neighbor for help again with withdrawal. During this particularly severe episode of withdrawal combined with a lack of supply, he transitioned to injection drug use:

> *"[F]or two days I was puking my brains out…I looked out the window and [saw my neighbor]…I was like, 'I need you to help me out again.' And he was like, 'for sure…do you have your syringe?' and I was like, 'fuck no, I don't have a syringe. I don't do that.'…[the withdrawals were] hurting so bad. I was like, 'you know what, I hate needles. Can you do it for me?'…he did that for me and that's how I tried shooting for the first time." (Keith; 34, white, male, housed).*

Despite Keith's hesitation to transition routes of administration due to his intense fear and dislike of needles, the urgency, severity, and vulnerability associated with withdrawal prompted a shift. Keith experienced shifts in access moving from a prescribed source to illicit market sources in addition to route of administration changes. He acknowledged these shifts as transitions points (to smoking tar, to injecting heroin).

Reflecting on the ways in which he felt his life had changed, Keith said,

> *"I realized how much my life got fucked up by my own doing." He went on to describe his evolving and complex relationships with his mother: "So she saw syringes. And I put her through a year of not the best son-mother relationship." (Keith; 34, white, male, housed).*

Conditions such as homelessness, poverty, and resource paucity reshape withdrawal to be vulnerability. Additionally, existing financial precarity contributed to the urgency with which participants needed to manage disruptive withdrawal symptoms. This was to engage in money-making activities and/or maintain employment. In this way structural conditions intensify risks associated with withdrawal, while being in withdrawal disrupts access to the material and financial resources which may mediate these vulnerabilities. Existing material difficulties contribute to the urgency and importance with which withdrawal is ranked within the order of vulnerability. Consequently, the urgency with which withdrawal symptoms are addressed leads to participation in higher risk behaviors, which are also more stigmatized. For instance, transitions in routes of administration, as in Keith's case, and type of opioid, as in Marc's case. This shift towards higher risk, stigmatized, and criminalized behaviors led to tensions and fragmentation in social relationships with friends, family, and loved ones driving social isolation and negative self-appraisal.

Discussion

The main contribution of this study is the use of constructivist grounded theory to develop interpretive theoretical insights about how social and structural forces shape opioid withdrawal experiences among a community sample of people who use opioids and inject drugs in Los Angeles, California. We found that overlapping structural vulnerabilities such as houselessness, material hardship, and financial precarity compress risks associated with withdrawal, reshaping withdrawal as a vulnerability itself, while simultaneously constricting access to income generation activities that allow individuals to better manage future withdrawal symptoms. Together, our findings underline the role of larger social forces in people who use opioids' self-reflections on opioid withdrawal mitigation behaviors, and how the experience of withdrawal itself is a form of vulnerability. We theorize withdrawal as a vulnerability that is (1) intensified by an individual's 'positionality' such as being unhoused, poor, and/or materially deprived, (2) prioritized due to urgency, onset, and severity of symptoms that impede money making which is a means to mediate pre-existing vulnerabilities, and (3) a driver of stigmatized, higher risk behaviors leading to negative self-appraisal which repositions individuals to be more vulnerable due to criminalization and social isolation.

Our findings show that for PWUO positioned at the intersection of houselessness, material needs insecurity, and violent victimization, withdrawal is a vulnerability. While existing studies have reported that avoiding withdrawal is a fundamental driver of continued opioid use among people who use opioids [8], in our study, managing withdrawal is not only about avoiding symptoms but also about avoiding added risks that arise from being debilitated within these structural contexts. Extant data highlight the ways in which drug policies based on prohibition and criminalization construct withdrawal-associated risks and go on to shape people who use opioids' ability to respond to these risks [3]. Our results build upon these findings as structural vulnerabilities not only produced and worsened withdrawal-related risks but also disrupted individuals' ability to implement their planned withdrawal management strategies [52]. Our findings illustrate the process by which structural vulnerabilities compound one another and lead to additional risks undertaken to manage withdrawal such as transitions related to opioid type or routes of administration (often to injection), severe and/or fatal symptoms, or other health outcomes [3, 52]. People who inject drugs are structurally vulnerable because these negative withdrawal-related outcomes are often due to their positionality within power hierarchies [20, 52], such as racialized, targeted, and/or minoritized identity status and policy

determinants such as housing insecurity and immiseration [53].

Participants in our study often were forced to negotiate the complex relationship between money and withdrawal on a daily basis. Under severe material conditions, participants described needing money to manage withdrawal yet needing to manage withdrawal in order to engage in money-making activities. Further, over three quarters reported having belongings stolen in the last 3 months and the majority made less than $2,101 per month, indicating the general material hardship experienced by people in this sample. Navigating withdrawal management around precarious financial circumstances, interactions with other illicit market actors, and material hardship, participants routines varied considerably. Nevertheless, participants consistently needed to find ways to address withdrawal so as to engage in their money-making endeavors. This was because the debilitating effects of withdrawal (such as nausea and vomiting) disrupted daily functioning and money-making activities. In a similar Los Angeles-based sample, withdrawal pain was incapacitating, and it interfered with participants' ability to maintain regular employment and engage in stable housing [8]. Accordingly, participants in our study strategized to prioritize withdrawal management first. Multiple participants noted waking up in opioid withdrawal [8] and structuring routines around the most debilitating symptoms. Once withdrawals were addressed, these routines allowed individuals to progress through daily tasks, most often with the goal of finding an income source. In this way, our data highlights the cyclical process that necessitated continued engagement to manage both withdrawals and financial precarity.

Often, participants prioritized withdrawal due to urgency and severity, however, as it was debilitating, management was necessary to access to engage in money-making to prevent and/or plan for future episodes. Importantly, when it came to intervening and prioritizing, risks were intensified and timelines were compressed by overarching forces such as (1) poverty and material hardship i.e., choosing between buying larger amounts because it was more affordable but risking a larger quantity to theft, and (2) participation in physically intensive income-generation activities within hostile urban environments (e.g., recycling among unhoused participants). Participants found themselves in circumstances where they were often exacerbating one risk to mitigate another and adding to the growing overwhelm associated with withdrawal management. In addition, the illicit opioid market was transitioning from heroin to fentanyl as we collected this data and there is extant evidence that fentanyl withdrawal onsets quicker than heroin [8, 31, 54, 55]. This would only serve to compress these previously discussed timelines for withdrawal management, further driving urgency.

We found that withdrawal led to shifts in substance use behaviors such as transitions in opioid type and route of administration, often resulting in higher risky and stigmatized behaviors which participants self-appraised negatively. These findings align with literature in which people who use opioids report constant anxiety related to ensuring consistent access to opioids to prevent or find relief from withdrawal, leading to engagement in practices outside of their usual routine [3]. Similar to our findings, these include using drugs in high-risk settings [52] and engaging in high-risk injection practices such as sharing syringes with others [3, 52], re-using syringes [14, 19], transitioning route of administration from smoking to injecting opioids [8, 56] and buying drugs from unfamiliar sources [3].

Participants self-reflected on how the urgency, severity, and vulnerabilities associated with withdrawal and their own position (i.e., access to substances, status, and so on) shaped past behaviors, often appraising both their behaviors and themselves, negatively. In some cases, these behaviors resulted in criminal legal intervention and/or shifts toward more stigmatized identities such as "heroin user" to "fentanyl user" or "using pills" to "smoking tar" to "shooting" opioids. These shifts contributed to negative self-appraisal and further intensified participants' existing structural vulnerabilities by driving social isolation i.e., not seeing family or being incarcerated for long periods of time. Joseph, who, counter to expectations in his predominantly Black social circles, began using heroin, discussed not only the shift to initiating heroin use but also his own intersectional lived experience of initiating and continuing to use heroin as a Black person. Participants acknowledged engaging in behaviors that they did not want to partake in due to withdrawal and internalized negative consequences associated with these behaviors. While some participants attributed these behaviors to drugs, they very rarely did to the range of structural conditions that they were navigating. Our findings situate these behavioral changes within larger social and built contexts such as houselessness and material hardship, the harms of which are intensified by opioid withdrawal.

Our findings contribute to the direct and indirect ways in which resource paucity contributes to challenges in managing withdrawal. Further, our community-engaged methods and relationships cultivated with SSPs facilitated meaningful data collection by increasing participation of understudied, difficult to access populations due to trust in and ongoing engagement with services at the recruitment sites. This trust may also have facilitated more accurate data reporting from participants, allowing the research team to collect valuable data advancing understanding of the structural drivers and implications

of withdrawal among PWID. Because of the study team's prior collection of sociodemographic data showing that clients served at the partner study sites were largely unhoused and underserved, we could contextualize the environmental and social factors influencing withdrawal. This allowed us to meaningfully engage with themes of resource paucity and the role of structural interventions in mitigating individual vulnerabilities.

Several unhoused participants in our study described the ways in which unsheltered houselessness and material deprivation compressed and amplified their risk for withdrawal. Structural interventions such as safe, permanent housing, basic income, and wrap around services are necessary to mitigate vulnerabilities associated with withdrawal [57, 58]. Basic income and housing first interventions may improve health outcomes and reduce healthcare needs among PWUD by improving stability and thus reducing engagement with the criminal justice system and experiences of violence [59]). One participant in our study pointed out how forms of material and financial support such as insurance coverage could positively disrupt the cycle of needing to make money to manage withdrawal by diverting their mental resources towards recovery. Prior research demonstrates high rates of insurance instability among this population, noting how approximately one third patients experience an insurance transition (changing from one insurance plan to another and/or losing coverage entirely) in the year after OUD diagnosis [60], hindering individuals' ability to initiate or continue treatment. People who use drugs are at greater risk of insurance insecurities such as changes, terminations, and under-coverage [61] due to War on Drugs policing and hyperincarceration [62]. For instance, higher incarceration rates may lead to Medicaid termination [61, 63, 64], lower labor market participation due to previous felony records, and consequently higher unmet medical needs including withdrawal treatment [61].

Steinberg and colleagues point out how Medicare (insurance for those 65 and older or with some disabilities) covers only low and high levels of substance use disorder (SUD) care intensity such as outpatient counseling and medically managed intensive inpatient services respectively [65, 66]. This leaves necessary intermediate care, such as residential treatment, unavailable—an issue given the chronic and progressive nature of SUDs [65, 66]. On the other hand, Medi-Cal is California's Medicaid program which covers all levels of care for opioid withdrawal management as determined by the of the American Society of Addiction Medicine (ASAM) [67]. Despite this, key barriers to access persist including (1) clinical settings lacking the expertise or clinicians needed to provide withdrawal management [68–70] (2) lack of support for and underuse of medication for opioid use disorder [70–72], (3) cost [73, 74], and (4) logistical complications (such as transportation, distance from healthcare centers, and changes in treatment location) in accessing care [74–76]. Among people who use drugs, evidence shows that access to public health insurance programs such as Medi-Cal increase likelihood of using medications that can manage withdrawal [70, 77, 78], while losing this coverage results in a heightened risk of mortality [79]. Our findings and prior scholarship underline the importance of addressing insurance-related barriers to accessing MOUD including coverage, prior authorization [80], and high deductibles.

Data from extant studies [10, 81–85], along with our own, contributes to the growing discourse that PWUO are managing intense and complex risks and are more supported in their endeavors with treatment protocols that are flexible, accommodating, and non-punitive. MOUD utilization was notably low among participants in our sample (Table 2) and no participants were currently enrolled in treatment. In another qualitative subsample from the same parent study, participants described using MOUD when required as a "proxy" for safe supply to mitigate the effects of fentanyl contamination [86] as well as relying on MOUD to reduce interactions with the risk environment by lowering time spent sourcing illicit substances and criminal-legal involvement [87]. Similarly, Frank and co-authors recently described how abstinence-focused methadone maintenance treatment (MMT) protocols further isolated people who use methadone on an as needed basis alongside active opioid use as a withdrawal management strategy as well as to save money, lower illicit opioid purchasing, and other prevent overdose [10]. We believe that withdrawal treatment, such as how medication for opioid use disorder is expanded, prescribed, and dispensed [10] may position people who are actively using opioids to navigate complex structural vulnerabilities from a place of assurance rather than urgency and fear; thereby serving a harm reduction tool that disrupts the cycle of withdrawal management and material precarity.

Limitations

We want to address limitations associated with this research. We used convenience sampling methods to participants in this study as data were collected during the pandemic when other methods such as targeted sampling were not feasible. Next, the illicit opioid market transitioned from heroin to fentanyl during these interviews, likely contributing more to material unpredictability and instability – if anything, that further emphasizes the importance of structural conditions described in this study. That said, we did not report specifically on fentanyl withdrawal. We also report on withdrawal symptoms that pertain to opioids in general but wherever possible we have included the opioid that the participant is referring

to and/or using. Heroin and street-sourced opioids may include contaminants (such as sedatives) which could impact withdrawal experiences. However, in this study, we did not synthesize findings regarding sedatives or other contaminants in the illicit opioid supply. While participants did discuss poly-substance use or co/joint use with stimulants and cannabis, we are unable to report on stimulant withdrawal or multiple types of withdrawal in the data collected from this sample. The limited data about contaminants and stimulant withdrawal were likely because our interview guide was focused on opioid use patterns and routines. Along this line, some participants discussed using MOUD and whether or not it worked to meet their goals. Since we did not set out to examine MOUD experiences and use, we did not probe regarding dosing, source, and type of use. Due to this, data presented regarding MOUD should be interpreted within these limitations. Despite these limitations, this research yields important knowledge about navigating withdrawal within hostile social and structural conditions from the perspective of people most impacted.

Conclusions

In this study, overlapping structural vulnerabilities such as unsheltered houselessness, poverty, material hardship, and criminalization exacerbated risks associated with withdrawal while simultaneously constricting ways in which individuals can manage symptoms. These findings describe and provide structural contexts to cyclical relationship between financial precarity and withdrawal management routines in shaping what is typically characterized as risk behavior. They illustrate how participants self-appraise shifts towards risk behaviors negatively further driving social isolation and intensifying existing structural vulnerabilities. Our study findings build upon the growing discourse advocating for the effectiveness of expanding MOUD for people who actively use opioids as a potential harm reduction intervention. By disrupting cycles of material hardship among socially disadvantaged PWUO, MOUD can serve as a tool to mitigate withdrawal symptoms when illicit opioids are unaffordable, unavailable, or otherwise risky to access,. Structural interventions like safe permanent housing, basic needs such as income, and effective insurance coverage provide a meaningful opportunity to intervene in the cycle of negotiating material instability and withdrawal management.

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

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Author contributions

S.S.G. and E.E.G. wrote the main manuscript text. J.H., R.N.B., and R.C.C. conceptualized and supervised the study and acquired funding. S.S.G., E.E.G., and R.C.C. curated the data and completed the formal analysis. All authors reviewed and edited the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

This study was approved by the University of Southern California Institutional Review Board (Study ID#: HS-18-00624). All study participants provided informed consent for participation.

Competing interests

The authors declare no competing interests.

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