



Published in final edited form as:

Int J Drug Policy. 2021 June ; 92: 103140. doi:10.1016/j.drugpo.2021.103140.

“How will I get my next week’s script?” Reactions of Reddit opioid forum users to changes in treatment access in the early months of the coronavirus pandemic

Noa Krawczyk^{a,*}, Amanda M. Bunting^b, David Frank^c, Joshua Arshonsky^d, Yuanqi Gu^e, Samuel R. Friedman^a, Marie A. Bragg^{d,e}

^aCenter for Opioid Epidemiology and Policy, Department of Population Health, NYU Grossman School of Medicine, 180 Madison Ave, New York NY, 10016, USA

^bSection on Tobacco, Alcohol, & Drug Use, Department of Population Health, NYU Grossman School of Medicine, 180 Madison Ave, New York NY, 10016, USA

^cBehavioral Science Training in Drug Abuse Research, NYU Rory Meyers College of Nursing, 433 1st Avenue, New York, NY 10010, USA

^dSection on Health Choice, Policy, and Evaluation, Department of Population Health, NYU Grossman School of Medicine, 180 Madison Ave, New York NY, 10016, USA

^eDepartment of Public Health Nutrition, NYU School of Global Public Health, 26 Broadway, New York, NY 10012, USA

Abstract

Background: The COVID-19 pandemic poses significant challenges to people with opioid use disorder (OUD). As localities enforce lockdowns and pass emergency OUD treatment regulations, questions arise about how these changes will affect access and retention in care. In this study, we explore the influence of COVID-19 on access to, experiences with, and motivations for OUD treatment through a qualitative analysis of public discussion forums on Reddit.

Methods: We collected data from Reddit, a free and international online platform dedicated to public discussions and user-generated content. We extracted 1000 of the most recent posts uploaded between March 5th and May 13th, 2020 from each of the two most popular opioid subreddits “*r/Opiates*” and “*r/OpiatesRecovery*” (total 2000). We reviewed posts for relevance to COVID-19 and opioid use and coded content using a hybrid inductive-deductive approach. Thematic analysis identified common themes related to study questions of interest.

Results: Of 2000 posts reviewed, 300 (15%) discussed topics related to the intersection of opioid use and COVID-19. Five major themes related to OUD treatment were identified: Concern about closure of OUD treatment services; transition to telehealth and virtual care; methadone treatment requirements and increased exposure to COVID-19; reactions to changing regulations on medications for OUD; and influences of the pandemic on treatment motivation and progress.

*Corresponding author. noa.krawczyk@nyulangone.org (N. Krawczyk).

Declarations of Interest

None.

Conclusion: In the face of unprecedented challenges due to COVID-19, reactions of Reddit opioid forum users ranged from increased distress in accessing and sustaining treatment, to encouragement surrounding new modes of treatment and opportunities to engage in care. New and less restrictive avenues for treatment were welcomed by many, but questions remain about how new norms and policy changes will be sustained beyond this pandemic and impact OUD treatment access and outcomes long-term.

Keywords

COVID-19; Reddit; Treatment; Opioids; Buprenorphine; Methadone

Introduction

The COVID-19 pandemic poses significant challenges to the wellbeing of people with opioid use disorder (OUD). Amidst an ongoing overdose crisis, people with OUD experience a range of co-occurring health and social vulnerabilities that place them at high risk of COVID-19 infection and subsequent health complications (Volkow, 2020; Wakeman, Green, & Rich, 2020; Wang, Kaelber, Xu, & Volkow, 2020). Disruptions in the illicit drug supply, often coupled with increased social isolation and mental health distress, have already exacerbated rates of overdose in some areas (McCann Pineo, & Schwartz, 2020; Slavova, Rock, Bush, Quesinberry, & Walsh, 2020; Tyndall, 2020).

As localities enforced lockdown periods, access to services and social networks was disrupted, and life shifted to remote environments, a major question became how this would affect access and retention in treatment for OUD for those who want it. Hundreds of thousands of people across the globe rely on medications for OUD (MOUD), including methadone, buprenorphine or extended-release naltrexone, which are highly protective against overdose Krawczyk et al. (2020), Larochelle et al. (2018), Leshner and Mancher (2019). However, these medications have historically required frequent in-person attendance at clinics or pharmacies. This is especially the case in the U.S., where methadone programs require daily or near-daily visits to licensed opioid treatment programs, and buprenorphine treatment often requires in-person initiation and frequent check-ins for drug screens or adjunct behavioral services. Given the challenges of attending treatment even before the pandemic (Green, Bratberg, & Finnell, 2020; Noa Krawczyk, Fingerhood, & Agus, 2020), people with OUD might experience compounded barriers when seeking or maintaining treatment during the pandemic. It is therefore critical to identify factors that afford or constrain access to these services during periods of time when officials recommended or required sheltering in place and staying home.

Concerns about increased overdose risk due to program closures, as well as fears about spread of COVID-19 during in-person visits to acquire illicit drugs or attend treatment (Alexander, Stoller, Haffajee, & Saloner, 2020) sparked the rapid implementation of new emergency OUD treatment and harm reduction policies for the duration of the pandemic. In the U.S., for example, federal regulators revised treatment policies to allow receipt of up to a 28-day take-home supply of methadone, and initiation of buprenorphine via telephone (Substance Abuse & Mental Health Services Administration, 2020). In British Columbia,

law makers allowed physicians to prescribe certain formulations of hydromorphone and morphine to people with OUD to reduce risk of overdose during the pandemic (BCCSU (British Columbia Centre on Substance Use), 2020). To date, little is known about how these changing circumstances and policies directly affect the lives of people seeking care for OUD (Blanco, Compton, & Volkow, 2020).

Social media provide a valuable opportunity to explore the lived experiences of people who sought care for OUD during early phases of the pandemic. As people became home-bound and isolated, social media became a critical source of information and social support for COVID-19 related concerns (Cinelli et al., 2020; Low, Rumker, Talkar, Torous, & Cecchi, 2020). Moreover, the internet has long served as a unique platform by which people who use drugs can communicate openly and anonymously. A large body of literature exists exploring how people who use drugs leverage online forums, both via the “surface web” or visible/searchable web forums as well as the private and harder to access “deep web,” including dark net anonymous forums that are often home to discussions of illicit activities (Grimani, Gavine & Moncur, 2020). Online forums allows people to discuss their own drug use and seek advice about the effects and quality of illicit products (Bancroft & Scott Reid, 2016), socialize and build community with others who share similar experiences and viewpoints (Moore & Chuang, 2017), seek advice and support through the process of remission and recovery from drug use (Graves et al., 2019), and even as a way to “confess” or disclose private or controversial behaviors (Yang & Huang, 2018). While the level of openness regarding personal drug use often relies on perceived level of visibility and pseudonymity, legal risk and social stigma (Barratt, 2011), the anonymity of online forums provides researchers with an opportunity to gain, in a natural setting, important insights into behaviors and perceptions of a geographically diverse sample of people who use drugs whose perspectives are not often included in research (Enghoff & Aldridge, 2019; Strickland & Victor, 2020). Such insight can inform health and drug policy beyond what is gained via typical participant recruitment and local research surveys.

In the current exploratory study, we aimed to conduct a qualitative analysis of publicly-available discussion forums on Reddit, a popular user-driven web content and discussion forum website to explore discussions related to experiences with OUD treatment during the COVID-19 pandemic. Reddit, which exists on the visible surface web that is easily accessible to all, is uniquely attractive for exchanging information about stigmatized topics like drug use and mental health because it allows users to post anonymously using pseudonyms (Choudhury & De, 2014; Meacham, Roh, Chang, & Ramo, 2019; Sowles et al., 2018). It therefore serves as a platform for people who use opioids or who are in remission from opioid use to communicate and seek advice from others (Costello, Martin, & Edwards Brinegar, 2017; Graves et al., 2019; Pandrekar et al., 2018). While Reddit does not disclose location of users, Reddit allowed us to explore discussions related to how COVID-19 afforded and/or constrained treatment for OUD during the early stages of the pandemic among a geographically diverse sample of Reddit participants. We specifically explored insights and perceptions related to three research questions: 1) How did the COVID-19 pandemic and related regulatory changes influence access to OUD treatment (both MOUD and other support services); 2) How did the COVID-19 pandemic and related regulatory changes influence experiences attending and continuously engaging in OUD treatment; and

3) How did the COVID-19 pandemic and related circumstances (both regulatory and social/economic) influence motivations for engaging and continuing OUD treatment? By exploring these questions, we hope to provide a snapshot of the initial effects of the intersecting COVID-19 and opioid epidemics on health and well-being and discuss implications for public health responses to these crises.

Methods

Reddit data collection

We extracted data from Reddit, an online platform dedicated to public discussions and content rating. Reddit comprises user-generated topical forums known as “*subreddits*,” to which Reddit users, who often refer to themselves as “Redditors,” submit posts with text, images, or links. These posts can then be commented on or voted on by other users. The majority of Reddit content is in English, with about half of users residing in the United States, followed by United Kingdom (8%) and Canada (8%) (Clement, 2020). We reviewed the two most frequently visited opioid subreddits “*r/Opiates*” and “*r/OpiatesRecovery*” to better understand the experiences of people engaged in opioid use or seeking treatment during the pandemic.

To extract subreddit content, we used Python 3.7.4 run on Jupyter Notebook 6.0. using packages *PRAW*, *pandas*, *datetime*, which allowed us to extract and convert each forum post (including the original post and its subsequent comments) from a subreddit thread to a readable word document that could be uploaded into Atlas.ti[®] qualitative analysis software for coding. We collected the 1000 most recent posts from each of the two subreddits at the time of data extraction on May 13th (2000 total posts) to capture posts going back to March 2020, when North America and Europe (the largest Reddit user bases) began experiencing the direct effects of COVID-19. Given the observational nature of this study and its use of public non-identifiable data, the New York University School of Medicine Institutional Review Board exempted it from review. To ensure the anonymity of Reddit forum users, their usernames were removed. Further, we slightly altered direct quotes to reduce risk of their searchability and identifiability, while leaving some typos/slang terms in order to preserve the style and intention of the original post without sacrificing anonymity (Ayers, Caputi, Nebeker, & Dredze, 2018; Franzke, Bechmann, Zimmer, & Ess, 2020; Meacham et al., 2019; Wilkinson & Thelwall, 2011).

Coding and thematic analysis

Once initial content was extracted from Reddit and uploaded to Atlas.ti[®], we trained nine analysts on our team on how to conduct qualitative coding using this software by appending codes to segments of relevant text where themes arise. The analysts underwent four 1-hour training sessions to become familiar with terminology and slang related to opioid use, treatments for OUD, and Reddit culture. Analysts reviewed all 2000 extracted text posts for relevance to opioid use and COVID-19 circumstances. We determined relevance using a list of key terms including “coronavirus,” “COVID-19,” “quarantine,” “social distancing,” “shutdown,” and “pandemic,” as well as other related terms or concepts referring to the pandemic. To initially identify relevant content, we reviewed only original posts rather than

all subsequent comments, in order to ensure the content reviewed was instigated by an original posting related to COVID-19 circumstances. We wanted to avoid, for example, reviewing a thread of ~50 comments on an unrelated topic where only one comment refers to the pandemic. However, for original posts that were deemed relevant to the pandemic, we reviewed and coded all subsequent comments as part of our qualitative analysis. Coders identified 300 (15%) original posts related to opioid use and COVID-19; the remaining 1700 were discarded.

Using a hybrid inductive-deductive approach (Fereday & Muir-Cochrane, 2006), analysts then coded the 300 COVID-19-relevant posts and their comments via Atlas.ti[®] software. We developed a codebook to flag content related to the research questions on the intersection of opioid use, treatment access, and COVID-19 circumstances. To assess consensus and comprehensiveness of the codebook, all analysts initially coded ten percent ($n = 30$) of posts. Afterwards, our team met and discussed codes and initial themes together to note similarities and differences in interpretation of codes and revise the codebook accordingly. We also discussed new topics and ideas that commonly arose in Reddit posts, and added additional codes to the codebook. As discussed in detail by McDonald, Schoenebeck and Forte (2019), the goal of these meetings was not to ensure perfect agreement or measure inter-rater reliability, but rather to discover and yield concepts and themes that would reveal content for discussion in this exploratory study. After multiple discussions and revisions of the codebook, we divided remaining posts to be coded by individual analysts. Table 1 presents a list of final codes that were applied to study content with example quotations.

The research team reviewed coded content and analyzed narratives using thematic analysis (Braun & Clarke, 2012) to identify relevant themes related to research questions on the influence of COVID-19 circumstances on access to, experiences with, and motivations for OUD treatment. When analyzing these themes, we found the concepts of affordances and constraints helped us interpret the data. First described by James Gibson in the context of ecological psychology (Gibson, 2014), the concept of affordances has become a central analytic tool in range of scientific fields of study, including alcohol and drug studies. (Dilkes-Frayne et al., 2019). According to Davis and Chouinard, affordance refers to the range of functions and constraints an object provides for, and places upon, structurally situated subjects (Davis et al., 2016). As applied in this research, the “object” at hand is the COVID-19 pandemic and its associated conditions, whose affordances and constraints are not static or predictable but rather converge and interact with several social, cultural and structural elements across different contexts. These concepts therefore allow us to consider how COVID-19 circumstances, within the context of existing cultural and regulatory structures around OUD treatment, both challenged and enabled opportunities for OUD treatment. We present the data through this lens below, discussing multiple possibilities and constraints to be addressed to allow for effective access and engagement in OUD care.

Results

We collected Reddit posts and organized them according to five thematic categories that emerged from the analysis in response to our three research questions on access,

engagement, and motivation for OUD treatment in the midst of COVID-19 circumstances. Below, we included paraphrased concepts and interpret select quotes in each category in relation to how COVID-19 has both constrained and afforded possibilities for OUD care.

Theme 1: concern about closure of OUD treatment services

Reddit forum users expressed significant concern and anxiety for themselves and others about closure of OUD treatment services amidst COVID-19 shutdowns and how this constrained their ability to continue or begin care. Of primary concern was that closure and lockdown regulations would cut off people in OUD treatment from their usual supply of MOUD and that this would endanger them by pushing them into withdrawal and return to drug use. Some expressed this as affecting their progress in treatment, while others worried about how this affected their ability to begin treatment with MOUD in the first place.

“Fourteen days freshly clean, scared Covid-19 will make me run out of suboxone if my clinic closes down. I’m curious what the methadone patients will do as well”

“Feeling horrible for all the recovering addicts who have been making progress with their medication assisted treatment who are going to suddenly go into withdrawals and may ruin their clean time by choosing to go back to the black market for their opiates to stave off withdrawals”

“I was on a waiting list before their COVID-19 stuff had started. I was going to be on buprenorphine sometime around now had things not shut down. My counsellor isn’t able to take phone calls, my social worker is shut down too, and I’m facing things that take my breathe away”

“I’m on Vivitrol and had been for three and a half years. I screwed up after 3 weeks off the shot because the doctor’s office was closed due to the pandemic.”

These conversations highlight the deep level of uncertainty around how pandemic-related closures could limit access to OUD treatments with detrimental consequences. Insurance coverage limitations, along with financial constrains related to COVID-19 job loss and high costs of MOUD were also discussed as a contributor to concerns about how COVID-19 related changes may influence patients’ ability to continue treatment.

“I’m also worried that even though I didn’t get the [vivitrol] shot today it may count as one of my three free internal medicine visits, after which are used up I am liable for 2800 out of pocket for the vivitrol injection. Currently out of work for eight weeks because coronavirus situation.”

There also appeared to be concern that OUD patients were not being considered by the government or even clinics themselves. Some forum users felt shut out by clinics that were not answering the phone, while others asked if governments had even considered MOUD patients in planning lockdown regulations. These sentiments may reflect the stigma that substance use patients experience, with treatment services often being siloed from other mainstream healthcare services. Some used Reddit to ask questions to seek clarity about changes in treatment operations or regulations, potentially as a way to engage with others that are also part of this stigmatized group.

“I’m worried that if we go on a two week shutdown how will I get my next weeks script? Will I have no choice but to withdraw? Is the government even considering this? I feel worse for the daily methadone patients-how will they survive? With most at my clinic being homeless and on methadone. This seems like a serious issue that needs to be addressed or maybe it has and I was not aware of it.”

“I frantically called the treatment center who were closed. They aren’t taking calls or processing patients. I frantically call my main doctor and left a message about Suboxone. Does anyone know if family doctors will prescribe Suboxone in emergency situations like this? I was waiting with the treatment center to get me into the meds but no, since they are closed right down. No phone access either.”

As the above experiences illustrate, COVID-19 circumstances, in the midst of existing logistical, financial, and stigma-related barriers created a high stress environment for many Reddit forum users that were already in care or looking to engage in OUD care.

Theme 2: transition to telehealth and virtual care

Despite many constraints brought on by COVID-19 related closures to OUD treatment, many Reddit posts discussed how the transition of many MOUD and supportive services to virtual platforms afforded them the opportunity to continue, or in some cases begin, engaging in OUD care services. Forum users described the effort by clinics to continue offering buprenorphine (Suboxone[®]) treatment and other services via telehealth to facilitate continuation of treatment during the pandemic and how this afforded them convenience and relief in enabling continued access to needed services.

“Depending on where you are I know there are some “virtual” suboxone programs where everything is done over the phone. You would only have to go to a pharmacy and pick up the suboxone.”

“Just participated in a webinar this afternoon to learn how to use the telehealth feature on my facility’s electronic medical record system. I like that so many places are staying open- it is scary but having support in the beginning and continuing treatment is so important”

In addition to opportunities to continue OUD treatment afforded by the switch to virtual technologies, other Reddit forum users focused on how COVID-19 afforded an opportunity to engage in social support with others who were similarly seeking OUD services during a time when social isolation was felt strongly during COVID-19 related closures and quarantine. This may be especially important given the stigma associated with drug use and substance use disorders that may contribute to feelings of isolation. Participants in Reddit forums may already be more likely to desire online social engagement with others who engage in opioid use or are seeking treatment for OUD.

“Had my 1st online group therapy today and it went well. Everyone was very supportive and the doctor asked us all if we needed any refills before we started.”

“Narcotics anonymous is the lifeboat in this sea of isolation.”

“Like myself and I’m sure hundreds of new people fresh out of treatment or detoxed on their bathroom floor out of losing their job and income do to the virus are isolated from circumstances out of our control with social distancing. The good news is there’s an application called Zoom that you can attend hundreds of meetings online.”

Thus, while COVID-19 closures were accompanied by significant concerns regarding constrains on people’s ability to engage in OUD treatment and related support services, in some cases, the availability of virtual platforms afforded a way to mitigate these effects and stay connected to needed services and social support networks.

Theme 3: methadone treatment requirements and increased exposure to COVID-19

A common discussion topic among Reddit forum users was concern about how methadone, while offering an alternative to street drug use, was highly burdensome and constrained their ability to keep a safe distance from others in the midst of the pandemic. This may have been particularly prevalent among U.S. Reddit forum participants given the strict methadone regulations that require daily visits to designated methadone clinics. Frustration was expressed at the rules around take home-medications and the disrespectful and stigmatizing nature of methadone treatment in which patients are forced to come to the clinic to be observed daily. In some cases, this was even seen as an incentive for quitting methadone treatment altogether, raising discussions amongst forum users about recommendations and strategies for doing so.

“Yeah with the stay-at-home order and the streets like a ghost town, I figured it’s time to quit my street dope habit. Fortunately or unfortunately I have methadone to fall back on. But never having passed a test I don’t get take-homes, so every day I mask and glove up and go run that germ gauntlet for my dose”

“My clinic is insanely disrespectful to me even though I am drug-free, and now have a job, go to school, have a steady place to live, am engaged to a great person and have a healthy relationship with family and friends. one of that matters because i forgot to call in once and they now want me to lose all my take-homes and start coming in every day of the week (traveling total of four hours each day) in the middle of a pandemic. i want to be done with this shit, how can i successfully taper down with these?”

“I don’t like being on a maintenance drug that I am physically dependent on. This plague is proof of that -Look at all the methadone people who are exposed to the virus because they still have to wait in line at a clinic every day. At least if the worst happens and vivitrol injections are shut down I won’t suffer from “naltrexone withdrawal” since it doesn’t exist”

These quotes illustrate how the current methadone treatment structure, despite affording an alternative to drug use, was often felt to be an overwhelming burden to well-being and personal dignity. The pandemic appeared to further exacerbate these sentiments under stressful conditions of risk of COVID-19 infection or potential service closures that could result in withdrawal.

Theme 4: reactions to changing regulations on medications for OUD

Reddit forum users expressed a wide range of reactions to the regulatory changes in medication allowances implemented amidst COVID-19. Many shared information about longer take-home periods for medications and less in-person requirements for prescriptions and urinalysis tests, likely reflecting the changes in US regulations around MOUD allowances. Others feared potential negative consequences of these new regulations leading to overuse of medications.

“Instead of having to go every day for my Suboxone, I was able to get a week’s worth at a time and only have to go once a week. When it was normal, I would miss days because the window of time they’re open is limited and I work and have depression so I couldn’t get there every day. With take homes I’m far less likely to miss a dose and less likely to use. It is much easier to stay sober if I have my doses with me.”

“Typically, take home privileges for even 1 night have to be earned through good behavior over the 1st couple of months of treatment. However, given the covid-19 situation the clinics have had to take precautionary measures, and have made the difficult decision to grant take home privileges to every patient, in the hopes that they will be able to self-regulate and only take their allotted dosage each day. This is a tremendous responsibility for anyone who enjoys opioids, let alone someone who’s just beginning their recovery. Being given a big bottle of an opioid agonist and told to only take “X amount per day” is a difficult task even for someone who’s been on methadone for a while.”

“just got 1 carry today and i had to use a decent amount of self-control to not use it... I’ve only been on treatment for a couple weeks now, but they started giving me carries 2 times a week because of covid-19. I almost told the doc to not give me any take homes, because as soon as he said that a flood of thoughts came into my head... But here i am reading about suboxone, which is kinda helping me not think of the pill bottle sitting right next to me”

Some posts also referred to changing regulations outside the U.S., such as alternative medications that became available in Canada and the U.K. as a result of COVID-19 emergency regulations. In the U.K., positive sentiments were expressed about how relaxed regulations that allowed treatment with dihydrocodeine as an alternative to methadone or buprenorphine afforded a new treatment opportunity for heroin users for whom prior treatment medications were ineffective. Others discussed a new provision in British Columbia, Canada allowing physicians to prescribe hydromorphone and morphine for persons with OUD as an emergency regulation and how this afforded an opportunity to reduce COVID-19 exposure and risks.

“My General Practitioner (I’m in the UK) has been giving me monthly take homes of 112 x dihydrocodeine 120 mg and 112x diazepam five mg since the start of this pandemic. 480 mg of dihydrocodeine and 20 mg of diazepam daily. Truth is I would be screwed if he hadn’t of done this. About time this was the norm instead of just offering methadone or suboxone, both of which never worked for me for over

13 years. Now i'm stable and have zero desire to use H [heroin] because all the right feelings are hitting the right receptors.”

“Vancouver is now giving hydromorphone and morphine to its opiate addicts to help with social distancing and reducing COVID-19 exposures. Thoughts: Canada has just rolled out a program to distribute opiate drugs to the homeless [...], drugs like morphine and hydromorphone at that, not your usual buprenorphine or methadone which understandably are not all that interesting if you're in a hardcore addiction. It's seems like a dicey position at first but what are your guys thoughts on doing this in other countries? I think this would be a fantastic idea in areas like LA or Chicago”

Thus, reactions to MOUD allowances varied substantially depending on individual perceptions and circumstances and included both discussions of affordances brought on by these new regulations as well as potential new constraints on treatment progress. In either circumstance, Reddit appeared to serve as a platform for users to share information, and express and seek support/feedback for their experiences and concerns.

Theme 5: influences of the pandemic on treatment motivation and progress

A final theme detected in opioid subreddits was the influence the pandemic had on motivation for engaging in care. Some Reddit forum users expressed feeling that COVID-19 lockdown, closures and isolation constrained their ability to make progress in their OUD treatment process.

“I'm feeling really bummed- this feels like the worst time to get clean. i really want to go to meetings in person, I'm unsure about an online meeting. i need the extra support but all counsellors are out of business due to the quarantine and totally isolated. in need of extra help right now but i feel defeated”

“This whole lockdown with the coronavirus is also not making it any easier. Keeping busy is tough as my outlets have always been the gym playing basketball, socializing, or work. There are also no in-person meetings to attend at the moment. I've considered telling my parents and checking-back into rehab, but I'm not even sure if that's running right now.”

Alternatively, there were also multiple discussions of COVID-19 circumstances affording a positive and encouraging opportunity to commit to addressing opioid use. In some Reddit posts, people even mentioned that they found the extra time on their hands, the transition to virtual support services, or time with family to be a positive change brought on by COVID-19, opening doors for more readily accessible services that might not have been available otherwise.

“Because of covid-19 I am out of a job. I'm trying to look at it as a blessing because now I have the time off from work to be able to do this [recovery] and to be serious about it!!”

“Because of this pandemic I've been able to attend my first NA meeting online, my parents are keeping an eye on me and my work laid me off. Everything sort of panned out perfectly.”

“Recently, I have been in a weird place since we went on lockdown. I haven’t been doing as much for my recovery and it has taken a toll on my spiritual condition. But have to remember, when I was getting high I was in a bad place. Maybe not at first but definitely at the end, and I don’t want to go back there.”

Thus, for some, COVID-19 constrained motivation and progress in OUD treatment, while for others, it afforded new incentives and opportunities. These differences reflect the widely heterogeneous individual-level characteristics of Reddit forum users, and how COVID-19 circumstances converged with various structural, social, and individual elements to affect people’s daily lives, needs and well-being. Whether expressing negative or positive feelings about the impact of COVID-19 on OUD treatment, posts suggested that Reddit as a platform holds tremendous value, because individuals could seek support and accountability to overcome difficult times.

Discussion

To our knowledge, the current study is one of the first to explore how the pandemic and accompanying quarantine circumstances, service closures, and changing treatment regulations have shaped the experiences and wellbeing of people who seek treatment for OUD. Findings revealed that reactions to COVID-19 varied widely among Reddit users who participate in opioid forums. This variation is likely driven by differing personal circumstances, needs, and beliefs, as well as distinct COVID-19 responses at the respective locations and timing of posts. Significantly influencing these circumstances were the country and jurisdiction where Reddit users resided (the majority likely in the U.S. (Clement, 2020)), both in relation to existing regulations and organization of the MOUD treatment system, as well as the severity and local responses to the pandemic.

We identified a few common themes across narratives that were central to discussions on this topic, drawing on the concept of affordances, in which COVID-19 circumstances and the regulatory landscape of substance use treatment both enable and constrain access to care services for OUD. We identified a number of ways in which the COVID-19 pandemic and related changes served as both a burden on OUD treatment as well as an opportunity for positive change, and many ways in which these experiences were influenced by existing social and structural conditions.

First, we observed significant distress regarding the strain of COVID-19 on accessing OUD treatment services and the inability to fill prescriptions, and how this could lead to withdrawal and return to dangerous drug use. Closures in OUD treatment programs and ensuing stress and negative consequences have been reported during prior emergencies, including the aftermath of 9/11, and Hurricanes Katrina and Sandy (Matusow, Benoit, Elliott, Dunlap, & Rosenblum, 2018; Pouget, Sandoval, Nikolopoulos, & Friedman, 2015; Rutkow, Vernick, Mojtabei, Rodman, & Kaufmann, 2012). The sense of anxiety gleaned from the posts points to the importance of emergency planning and communicating clear guidelines to both substance use treatment providers and the public (Rutkow et al., 2012). Planning and communication is especially critical for essential services such as MOUD for which absence can lead to severe and potentially deadly consequences (Krawczyk et al.,

2020; Sordo et al., 2017). Many Reddit forum users also expressed concern about their ability to attend therapy or peer-support groups. This demonstrates the important role these services play for some in sustaining engagement in treatment (Kelly, Abry, & Fallah-Sohy, 2019; Monico et al., 2015), and perhaps particularly among Reddit forum users who are already prone to seeking peer-feedback and support.

Reddit participants also engaged in significant discussions around new telehealth and virtual platforms and how they afforded new ways to access to buprenorphine, behavioral therapy and peer-support groups. For some, telehealth and quarantine circumstances also afforded more time at home, providing a unique opportunity to begin seeking treatment for OUD. Others discussed reduced treatment burden due to longer take-home allowances for MOUD and how this helped maintain their engagement in care. Champions of making medications more accessible have called for more flexibility, expanded telehealth options and lower in-person visit requirements for years to facilitate initiation and retention in MOUD (Calcaterra et al., 2019; Weintraub, Greenblatt, Chang, Himelhoch, & Welsh, 2018). Advocates have therefore pressed to maintain the novel changes allowing telehealth initiation of buprenorphine and longer-take home for methadone in the U.S. (C. S. Davis & Samuels, 2020; Green et al., 2020; Kharti et al., 2020; Noa Krawczyk et al., 2020), as an important step toward reducing barriers for OUD treatment. Posts from Canada and the U.K. also praised shifts in allowances of alternative opioid medications to mitigate opioid harms during the pandemic, as a hopeful improvement in affording treatment and harm reduction opportunities to persons for which traditional MOUD is not effective or desired.

Nonetheless, not all Reddit forum users appeared to benefit from changing MOUD regulations. Many described themselves as ineligible for take-home methadone and expressed frustration or injustice over dependence on a treatment that was burdensome and could expose them to COVID-19. Despite official loosening of regulations, these experiences reveal how policies may not translate to concrete changes for many patients, especially those considered less stable on MOUD and constrained by a burdensome and highly controlling and stigmatizing treatment system. Some discussed longer take-homes as a potential source of temptation to misuse, especially in earlier stages of treatment. Concern about take-homes may also reflect internalized acceptance of the longstanding paradigmatic stigma that methadone patients cannot be trusted with this medication (Des Jarlais, Paone, Friedman, Peyser, & Newman, 1995; Harris & McElrath, 2012). This harm caused by overly-burdening requirements on one hand, and concern over lacking structure on the other, calls for a need to revamp our systems of methadone delivery to balance safety, access, and treating patients with dignity and humanity. This revamping will require changing regulations, funding streams and procedures to allow for flexible, harm-reduction oriented and person-centered MOUD care (Frank, 2018; Noa Krawczyk et al., 2020). These findings also emphasize the need for alternative treatments and regimens that are less disruptive to daily life, and for alternative options for people for whom methadone, buprenorphine and naltrexone are not sufficient or desirable.

Finally, Reddit forum users' perspectives were mixed about how the COVID-19 pandemic would impact motivation for treatment. Some people reported returning to drug use due to pandemic circumstances; many struggled with their inability to attend in-person services or

activities that kept them motivated. However, many also expressed resilience, encouraging themselves and others to use the pandemic as an opportunity for a fresh start and time to make constructive changes. These sentiments emphasize the role of Reddit as a safe platform through which users can support each other during these challenging times (Bunting et al., n.d.; Choudhury & De, 2014; Sowles et al., 2018; van der Nagel & Frith, 2015).

This study has multiple limitations. First, while we could not assess the demographics of subreddit post authors, Reddit users are largely composed of younger men who are prone to seeking online communities (Clement, 2020). Many perceptions and experiences related to treatment and accessing online platforms should therefore be interpreted in the context of this group, and may not reflect those of the larger, opioid-using community or of people seeking treatment. We also could not determine the location of posts and therefore the local circumstances surrounding conversations. This paper focuses on experiences related to treatment and service seeking and explored only the two largest opioid subreddits, so it does not cover narratives from other subreddits that may relate to the impact of COVID-19 on OUD treatment and other aspects of opioid use.

Conclusion

The COVID-19 pandemic has brought unprecedented challenges to an already turbulent overdose crisis and highly cumbersome substance use treatment system. This study provides valuable insights into how these circumstances have both afforded and constrained access to OUD care under a rapidly changing landscape of service availability and regulations. In the face of these challenges, Reddit opioid forum users revealed increased distress while some forum users simultaneously expressed a strong sense of resilience sought through self-determination and social support. Less restrictive access to MOUD and alternative opioid medications for harm reduction were seen as welcome changes by many, although questions remain about the ideal balance between in-person contact and remote care, especially as risk of COVID-19 contagion persists. More research is needed to assess how policy changes that resulted from COVID-19 will be sustained beyond this pandemic and impact OUD treatment access and outcomes long-term. Studies using unsolicited social media data in real-time to capture experiences of persons with stigmatized behaviors and conditions are valuable for highlighting voices that often go unheard but are critical for generating humane and effective public health responses.

Acknowledgments

Authors would like to thank Ines Del Giudice, Zora Hall, Emmanuella Kobara, Diego Quintana Licona, Carla Milan, Andrea Rodriguez, Carla Seet, Kirti Singh, Ashley Tang for their invaluable participation in this research through coding of the data. Authors would also like to thank all Reddit forum users whose experiences and insights were captured and discussed in this study.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. David Frank was supported by the NIH/NIDA funded T32 training grant 5T32DA007233-35. Amanda Bunting was supported by R25DA037190 (PI: Beckwith) and T32-HS026120-01 (PIs: Schwartz & Horwitz).

References

- Alexander GC, Stoller KB, Haffajee RL, & Saloner B (2020). An epidemic in the midst of a pandemic: Opioid use disorder and COVID-19. *Annals of Internal Medicine*. 10.7326/M20-1141.
- Ayers JW, Caputi TL, Nebeker C, & Dredze M (2018). Brief communication don't quote me: Reverse identification of research participants in social media studies. *NPJ Digital Medicine (nature partner journals)*, 1 (30). 10.1038/s41746-018-0036-2.
- Bancroft A, & Scott Reid P (2016). Concepts of illicit drug quality among darknet market users: Purity, embodied experience, craft and chemical knowledge. *International Journal of Drug Policy*, 35, 42–49. 10.1016/j.drugpo.2015.11.008. [PubMed: 26777135]
- Barratt MJ (2011). Discussing illicit drugs in public internet forums: Visibility, stigma, and pseudonymity. In C and T 2011 – 5th International conference on communities and technologies, conference proceedings (pp. 159–168). 10.1145/2103354.2103376.
- BCCSU (British Columbia Centre on Substance Use). (2020). New interim clinical guidance in British Columbia to reduce risks for people who use substances during dual public health emergencies. www.bccsu.ca/covid-19/
- Blanco C, Compton WM, & Volkow ND (2020). Opportunities for research on the treatment of substance use disorders in the context of COVID-19. *JAMA Psychiatry*. 10.1001/jamapsychiatry.2020.3177.
- Braun V, & Clarke V (2012). Thematic analysis. In *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. 10.1037/13620-004.
- Bunting AM, Frank D, Arshonsky J, Bragg MA, Friedman SR, & Krawczyk N (n.d.). Socially-supportive norms and mutual aid of people who use opioids during the initial COVID-19 pandemic.
- Calcaterra SL, Bach P, Chadi A, Chadi N, Kimmel SD, Morford KL, et al. (2019). Methadone matters: What the United States can learn from the global effort to treat opioid addiction. *Journal of General Internal Medicine*, 34, 1039–1042. 10.1007/s11606-018-4801-3. [PubMed: 30729416]
- Choudhury M. De, & De S (2014). Mental health discourse on reddit: Self-disclosure, social support, and anonymity. In *Proceedings of the 8th international conference on weblogs and social media, ICWSM 2014* (pp. 71–80). www.aaai.org.
- Cinelli M, Quattrocioni W, Galeazzi A, Valensise CM, Brugnoli E, Schmidt AL et al. (2020). The COVID-19 social media infodemic. <http://arxiv.org/abs/2003.05004>
- Clement J (2020). Reddit: Traffic by country June 18. Statista <https://www.statista.com/statistics/325144/reddit-global-active-user-distribution/>.
- Costello KL, Martin JD, & Edwards Brinegar A (2017). Online disclosure of illicit information: Information behaviors in two drug forums. *Journal of the Association for Information Science and Technology*, 68 (10), 2439–2448. 10.1002/asi.23880.
- Davis CS, & Samuels EA (2020). Continuing increased access to buprenorphine in the United States via telemedicine after COVID-19. *International Journal of Drug Policy*, Article 102905. 10.1016/j.drugpo.2020.102905.
- Davis JScience, J. C.-B. of, & T.. (2016). Theorizing affordances: From request to refuse. *Journal SAGE*, 36 (4), 241–248. 10.1177/0270467617714944.
- Des Jarlais DC, Paone D, Friedman SR, Peyser N, & Newman RG (1995). Regulating controversial programs for unpopular people: Methadone maintenance and syringe exchange programs. *American Journal of Public Health*, 85, 1577–1584. 10.2105/AJPH.85.11.1577. [PubMed: 7485676]
- Dilkes-Frayne E, ... Savic M (2019). Going online: The affordances of online counseling for families affected by alcohol and other drug issues. *Journals.Sagepub.Com*, 29 (14), 2010–2022. 10.1177/1049732319838231.
- Enghoff O, & Aldridge J (2019). The value of unsolicited online data in drug policy research. *International Journal of Drug Policy*, 73, 210–218. 10.1016/j.drugpo.2019.01.023. [PubMed: 30711411]

- Fereday J, & Muir-Cochrane E (2006). Demonstrating Rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5 (1), 80–92. 10.1177/160940690600500107.
- Frank D (2018). I was not sick and I didn't need to recover": Methadone Maintenance Treatment (MMT) as a refuge from criminalization. *Substance Use and Misuse*, 53 (2), 311–322. 10.1080/10826084.2017.1310247. [PubMed: 28704148]
- Franzke aine shakti, Bechmann A, Zimmer M, & Ess C (2020).& Association of Internet Researchers. Internet research: Ethical guidelines 3.0 <https://aoir.org/reports/ethics3.pdf>
- Gibson J (2014). The ecological approach to visual perception: Classic edition. [https://books.google.com/books?hl=en&lr=&id=8BSLBQAAQBAJ&oi=fnd&pg=PP1&dq=Gibson,+J.+J.+ \(1979\).+The+ecological+approach+to&ots=zPv1bMnl5q&sig=E3o3uk_1kiKmSzu1IaBbxqFNmNE](https://books.google.com/books?hl=en&lr=&id=8BSLBQAAQBAJ&oi=fnd&pg=PP1&dq=Gibson,+J.+J.+ (1979).+The+ecological+approach+to&ots=zPv1bMnl5q&sig=E3o3uk_1kiKmSzu1IaBbxqFNmNE).
- Graves RL, Sarker A, Al-Garadi MA, Yang Y, Love JS, O'Connor K, et al. (2019). Effective buprenorphine use and tapering strategies: Endorsements and insights by people in recovery from opioid use disorder on a Reddit forum. *BioRxiv*, Article 871608. 10.1101/871608.
- Green TC, Bratberg J, & Finnell DS (2020). Opioid use disorder and the COVID 19 pandemic: A call to sustain regulatory easements and further expand access to treatment. *Substance Abuse*, 41, 147–149. 10.1080/08897077.2020.1752351. [PubMed: 32314951]
- Grimani A, Gavine A, & Moncur W (2020). An evidence synthesis of strategies, enablers and barriers for keeping secrets online regarding the procurement and supply of illicit drugs. *International Journal of Drug Policy*: 75. Elsevier B.V. 10.1016/j.drugpo.2019.102621.
- Harris J, & McElrath K (2012). Methadone as Social Control. *Qualitative Health Research*, 22 (6), 810–824. 10.1177/1049732311432718. [PubMed: 22232295]
- Kelly JF, Abry AW, & Fallah-Sohy N (2019). Mutual help and peer support models for opioid use disorder recovery (pp. 139–167). 10.1007/978-3-030-16257-3_7.
- Kharti U, Davis CS, Krawczyk N, Lynch M, Berk J, & Samuels EA (2020). These key telehealth policy changes would improve buprenorphine access while advancing health equity. *Health Affairs Blog*. <https://www.healthaffairs.org/doi/10.1377/hblog20200910.498716/full/>.
- Krawczyk N, Mojtabai R, Stuart E, Fingerhood M, Agus D, Lyons BC, et al. (2020). Opioid agonist treatment and fatal overdose risk in a statewide population receiving opioid use disorder services. *Addiction*. 10.1111/add.14991.
- Krawczyk Noa, Fingerhood MI, & Agus D (2020). Lessons from COVID 19: Are we finally ready to make opioid treatment accessible? *Journal of Substance Abuse Treatment*. 10.1016/j.jsat.2020.108074.
- Larochelle MR, Bernson D, Land T, Stopka TJ, Wang N, Xuan Z, et al. (2018). Medication for opioid use disorder after nonfatal opioid overdose and association with mortality: A cohort study. *Annals of Internal Medicine*, 169 (3), 137–145. 10.7326/M17-3107. [PubMed: 29913516]
- Leshner AI, & Mancher M (2019). Medications for opioid use disorder save lives. *National Academies Press*. 10.17226/25310.
- Low D, Rumker L, Talkar T, Torous J, & Cecchi G (2020). Natural language processing reveals vulnerable mental health support groups and heightened health anxiety on Reddit during COVID-19. <https://psyarxiv.com/xvwcy/download?format=pdf>
- Matusow H, Benoit E, Elliott L, Dunlap E, & Rosenblum A (2018). Challenges to opioid treatment programs after hurricane sandy: Patient and provider perspectives on preparation, impact, and recovery. *Substance Use and Misuse*, 53 (2), 206–219. 10.1080/10826084.2016.1267225. [PubMed: 28296524]
- McCann Pineo M, & Schwartz RM (2020). Commentary on the coronavirus pandemic: Anticipating a fourth wave in the opioid epidemic. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12 (S1), S108. 10.1037/tra0000622.
- McDonald N, Schoenebeck S, & Forte A (2019). Reliability and inter-rater reliability in qualitative research: Norms and guidelines for CSCW and HCI practice. In *Proceedings of the ACM on human-computer interaction*: 3 (p. 23). 10.1145/3359174.

- Meacham MC, Roh S, Chang JS, & Ramo DE (2019). Frequently asked questions about dabbing concentrates in online cannabis community discussion forums. *International Journal of Drug Policy*, 74, 11–17. 10.1016/j.drugpo.2019.07.036. [PubMed: 31400582]
- Monico LB, Gryczynski J, Mitchell SG, Schwartz RP, O'Grady KE, & Jaffe JH (2015). Buprenorphine treatment and 12-step meeting attendance: Conflicts, compatibilities, and patient outcomes. *Journal of Substance Abuse Treatment*, 57, 89–95. [PubMed: 25986647]
- Moore C, & Chuang L (2017). Redditors revealed: Motivational factors of the Reddit community. In *Proceedings of the 50th Hawaii International conference on system sciences (2017)*. 10.24251/hicss.2017.279.
- Pandreakar S, Chen X, Gopalkrishna G, Srivastava A, Saltz M, Saltz J, et al. (2018). Social media based analysis of opioid epidemic using Reddit. *AMIA. .. Annual Symposium Proceedings. AMIA Symposium*, 2018, 867–876. [PubMed: 30815129]
- Pouget ER, Sandoval M, Nikolopoulos GK, & Friedman SR (2015). Immediate impact of Hurricane Sandy on people who inject drugs in New York City. *Substance Use and Misuse*, 50 (7), 878–884. 10.3109/10826084.2015.978675. [PubMed: 25775259]
- Rutkow L, Vernick JS, Mojtabai R, Rodman SO, & Kaufmann CN (2012). Legal challenges for substance abuse treatment during disasters. *Psychiatric Services*, 63, 7–9. 10.1176/appi.ps.2012000p7. [PubMed: 22227749]
- Slavova S, Rock P, Bush HM, Quesinberry D, & Walsh SL (2020). Signal of increased opioid overdose during COVID-19 from emergency medical services data. *Drug and Alcohol Dependence*, Article 108176. 10.1016/j.drugalcdep.2020.108176.
- Sordo L, Barrio G, Bravo MJ, Indave BI, Degenhardt L, Wiessing L, et al. (2017). Mortality risk during and after opioid substitution treatment: Systematic review and meta-analysis of cohort studies. *BMJ*, 357, j1550 [doi]. 10.1136/bmj.j1550. [PubMed: 28446428]
- Sowles SJ, McLeary M, Optican A, Cahn E, Krauss MJ, Fitzsimmons-Craft EE, et al. (2018). A content analysis of an online pro-eating disorder community on Reddit. *Body Image*, 24, 137–144. 10.1016/j.bodyim.2018.01.001. [PubMed: 29414146]
- Strickland JC, & Victor GA (2020). Leveraging crowdsourcing methods to collect qualitative data in addiction science: Narratives of non-medical prescription opioid, heroin, and fentanyl use. *International Journal of Drug Policy*, 75, Article 102587. 10.1016/j.drugpo.2019.10.013.
- Substance Abuse and Mental Health Services Administration. (2020). FAQs: Provision of methadone and buprenorphine for the treatment of Opioid Use Disorder in the COVID-19. 5–7. <https://www.samhsa.gov/sites/default/files/otp-guidance-20200316.pdf>
- Tyndall M (2020). Safer opioid distribution in response to the COVID-19 pandemic. *International Journal of Drug Policy*, Article 102880. 10.1016/j.drugpo.2020.102880.
- van der Nagel E, & Frith J (2015). Anonymity, pseudonymity, and the agency of online identity: Examining the social practices of r/Gonewild. *First Monday*, (3), 20. 10.5210/fm.v20i3.5615.
- Volkow ND (2020). Collision of the COVID-19 and Addiction Epidemics. *Annals of Internal Medicine*, 173, 61–62. 10.7326/M20-1212. [PubMed: 32240293]
- Wakeman SE, Green TC, & Rich J (2020). An overdose surge will compound the COVID-19 pandemic if urgent action is not taken. *Nature Medicine*, 1–2. 10.1038/s41591-020-0898-0.
- Wang QQ, Kaelber DC, Xu R, & Volkow ND (2020). COVID-19 risk and outcomes in patients with substance use disorders: Analyses from electronic health records in the United States. *Molecular Psychiatry*, 1–10. 10.1038/s41380-020-00880-7.
- Weintraub E, Greenblatt AD, Chang J, Himelhoch S, & Welsh C (2018). Expanding access to buprenorphine treatment in rural areas with the use of telemedicine. *The American Journal on Addictions*, 27 (8), 612–617. 10.1111/ajad.12805. [PubMed: 30265425]
- Wilkinson D, & Thelwall M (2011). Researching personal information on the public web: Methods and ethics. *Social Science Computer Review*, 29, 387–401. 10.1177/0894439310378979.
- Yang Y, & Huang Y (2018). Dumping the closet skeletons online: Exploring the guilty information disclosure behavior on social media. In *Proceedings of the international AAAI conference on web and social media*: 13 www.aaai.org.

Table 1

Excerpts and Examples from Codebook used for Thematic Analysis.

Code	Code Description	Inductive/ deductive	Example Quote
Accessing telehealth services	Discussing switch to telehealth platforms to receive opioid treatment medications or other services related to COVID-19 closures	Deductive	"I was on a waiting list before their COVID-19 stuff had started. I was going to be on buprenorphine sometime around now had things not shut down. My counsellor isn't able to take phone calls, my social worker is shut down too, and I'm facing things that take my breathe away"
COVID-related closure changes	Discussing issues related to closure/changes in service availability due to COVID-19	Deductive	"Feeling horrible for all the recovering addicts who have been making progress with their medication assisted treatment who are going to suddenly go into withdrawals and may ruin their clean time by choosing to go back to the black market for their opiates to stave off withdrawals"
Triggers for use/cravings	Discussing experiences of cravings or triggers for use tied to COVID-19-related circumstances	Inductive	"This whole lockdown with the coronavirus is also not making it any easier. Keeping busy is tough as my outlets have always been the gym playing basketball, socializing, or work. There are also no in-person meetings to attend at the moment. I've considered telling my parents and checking-back into rehab, but I'm not even sure if that's running right now."
Increased interest in treatment	Discussing new or increased interest in treatment as a result of COVID-19 circumstances	Inductive	"Because of covid-19 I am out of a job. I'm trying to look at it as a blessing because now I have the time off from work to be able to do this and to be serious about it!"
Changes in access to MOUD	Discussing issues related to accessing opioid treatment medications (methadone, buprenorphine (suboxone) or naltrexone (vivitrol) during COVID-19.	Deductive	"Yeah with the stay-at-home order and the streets like a ghost town, I figured it's time to quit my street dope habit. Fortunately or unfortunately I have methadone to fall back on. But never having passed a test I don't get take-homes, so every day I mask and glove up and go run that germ gauntlet for my dose"
Stocking supply of medication	Discussing stocking or assuring full supply of medication treatments (methadone, buprenorphine, naltrexone) as to not run out during COVID-19	Deductive	"Typically, take home privileges for even I might have to be earned through good behavior over the 1st couple of months of treatment. However, given the covid-19 situation the clinics have had to take precautionary measures, and have made the difficult decision to grant take home privileges to every patient, in the hopes that they will be able to self-regulate and only take their allotted dosage each day. This is a tremendous responsibility for anyone who enjoys opioids, let alone someone who's just beginning their recovery. Being given a big bottle of an opioid agonist and told to only take "X amount per day" is a difficult task even for someone who's been on methadone for a while."
Relapse/return to use	Discussing experience of relapse tied to COVID-19-related circumstances	Deductive	"I'm on Vivitrol and had been for three and a half years. I screwed up after 3 weeks off the shot because the doctor's office was closed due to the pandemic."
Increased fear or anxiety	Discussing increased feelings of fear or anxiety tied to opioid use under COVID-19 circumstances	Inductive	"I'm worried that if we go on a two week shutdown how will I get my next weeks script? Will I have no choice but to withdrawal? Is the government even considering this? I feel worse for the daily methadone patients-how will they survive? With most at my clinic being homeless and on methadone. This seems like a serious issue that needs to be addressed or maybe it has and I was not aware of it."
Offering advice/support	Offering advice/support/information related to issues or questions that arise during COVID19	Deductive	"Recently, I have been in a weird place since we went on lockdown. I haven't been doing as much for my recovery and not at first but definitely at the end, and I don't want to go back there."
Asking for advice/support	Asking other users for advice/support/information related to issues or questions that arise during COVID19	Deductive	"My clinic is insanely disrespectful to me even though I am drug-free, and now have a job, go to school, have a steady place to live, am engaged to a great person and have a healthy relationship with family and friends. one of that matters because i forgot to call in once and they now want me to lose all my take-homes and start coming in every day of the week (traveling total of four hours each day) in the middle of a pandemic. i want to be done with this shit, how can i successfully taper down with these?"

Code	Code Description	Inductive/ deductive	Example Quote
Stream of consciousness/ venting	Writing about personal experiences or thoughts without a specific purpose of asking for or offering advice	inductive	My General Practitioner (I'm in the UK) has been giving me monthly take homes of 112 x dihydrocodene 120 mg and 112x diazepam five mg since the start of this pandemic. 480 mg of dihydrocodene and 20 mg of diazepam daily. Truth is I would be screwed if he hadn't of done this. About time this was the norm instead of just offering methadone or suboxone, both of which never worked for me for over 13 years. Now I'm stable and have zero desire to use H [heroin] because all the right feelings are hitting the right receptors."
Reducing overdose risk	Discussing experiences related to reducing overdose risk, such as not using opioids alone or stocking naloxone despite COVID-19 changes		"Vancouver is now giving hydromorphone and morphine to its opiate addicts to help with social distancing and reducing COVID-19 exposures. Thoughts: Canada has just rolled out a program to distribute opiate drugs to the homeless [...], drugs like morphine and hydromorphone at that, not your usual buprenorphine or methadone which understandably are not all that interesting if you're in a hardcore addiction. It's seems like a dicey position at first but what are your guys thoughts on doing this in other countries? I think this would be a fantastic idea in areas like LA or Chicago."
Coping strategies for sobriety	Discussing strategies being used to address cravings and maintain sobriety from opioid use under COVID-19 circumstances	Inductive	"Like myself and I'm sure hundreds of new people fresh out of treatment or detoxed on their bathroom floor out of losing their job and income do to the virus are isolated from circumstances out of our control with social distancing. The good news is there's an application called Zoom that you can attend hundreds of meetings online."
COVID-related job/income loss	Discussing issues related to job loss due to COVID-19 related closures/changes	Deductive	"I'm also worried that even though I didn't get the [vivitrol] shot today it may count as one of my three free internal medicine visits, after which are used up I am liable for 2800 out of pocket for the vivitrol injection. Currently out of work for eight weeks because coronavirus situation."

Note: This table includes codes that were applied in the thematic analysis for this study and is not a comprehensive list of codes that were originally proposed/assessed. Quotes were slightly revised to preserve anonymity of post.