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Fentanyl in pressed oxycodone pills: A qualitative analysis of online community experiences with an emerging drug trend

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Abstract

Objectives: There is a growing concern over the increased prevalence of fentanyl contaminated oxycodone pills, referred to as M30s. The current study is an examination of content on the Reddit social media site in order to understand the perceptions of and experiences with exposure to fentanyl contaminated M30 pills.

Methods: Data include subreddit posts collected from January 1, 2021, to July 28, 2021, from 71 drug-related subreddits using 34 fentanyl-related search terms. A random subsample of 500 posts was examined for thematic analysis. 226 (45.2%) of posts were determined to be relevant and included in the final sample.

Results: Over one-third (n=85, 37.6%) of subreddit posts with mention of fentanyl were related to pressed M30 pills. Three emergent themes related to pressed M30 pills were identified: suspicion of contamination in oxycodone pills was pervasive (51.2%), composition of pills evoked anxiety (40%), and M30 mitigation and testing strategies (29.4%).

Conclusions: Many persons on the online communities of Reddit who use drugs were aware of fentanyl contamination in the current pressed pill market. Reddit offered a space to network with others to discuss harm reduction strategies and anxieties surrounding the pervasiveness of fentanyl in the current drug market.

Keywords

fentanyl; pressed pills; M30; oxycodone; Reddit; social media

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Declaration of Interest Statement

The authors have no conflicts of interest to declare.

Introduction

In the United States, a record high of over 100,000 drug overdose deaths occurred between May 2020 and April 2021 (O'Donnell et al., 2021). As reported by the CDC, the increase in drug overdose deaths since 2019 has been primarily driven by synthetic opioids; an estimated 64.0% of the >100,000 overdose deaths from May 2020 to April 2021 involved synthetic opioids, and nearly 30% of deaths co-involved another opioid (O'Donnell et al., 2021). These synthetic opioids are primarily illicitly manufactured fentanyls (IMFs), which include both fentanyl and illicitly manufactured analogs of fentanyl (Ciccarone, 2021; O'Donnell et al., 2021). Research suggests that IMFs are over 50 times more potent than heroin, which contributes to great concern around the widespread, increased presence of fentanyl and other IMFs in the United States in further contributing to overdose morbidity and mortality (Ciccarone, 2021; Mistler et al., 2020).

It is now increasingly common for IMFs to be pressed into counterfeit pills resembling oxycodone and other prescription drugs that are sold in the illicit drug market (O'Donnell et al., 2021). Prescription opioids were an initial contributor to the opioid overdose crisis, with the increased availability of prescription opioids in the 1990s into the early 2000s. Despite decreased prescribing rates (Guy et al., 2017), the misuse of prescription opioids remains a concern, with 9.3 million people in 2020 reporting the misuse of a prescription opioid (NSDUH 2021). A recent report by the Drug Enforcement Administration (DEA) suggests that people who use drugs (PWUD) can often mistake these IMF-contaminated counterfeit pills for legitimate prescription pills, a dangerous precedent due to the heightened potency of IMFs (Ciccarone, 2021; Drug Enforcement Administration [DEA], 2021). In June of 2021, the DEA put out an alert with a newly launched public campaign "One Pill Can Kill" warning of increasing fentanyl contamination among pressed oxycodone (common name brands: Percocet, OxyContin), commonly referred to as M30s due to the "M" and "30" marked onto the blue pill (DEA, 2021). The pills are commonly taken orally but can also be snorted and injected (Kirsh, Peppin, & Coleman, 2013). DEA testing of seized pills has found that 2 out of every 5 pills have what is considered a lethal dose of fentanyl (>2mg) (DEA, 2021).

This paper focuses on the increasingly common counterfeit oxycodone M30 pills contaminated with fentanyl. These pills are often referred to as the "Blues" due to their commonly blue color or simply "M30s" (DEA, 2021). They are often indistinguishable from commercially manufactured pills even amongst some experienced users (Multnomah County, 2021). Given the heightened relevance of this type of pressed pill with high risk of fentanyl contamination, this study aimed to understand the perceptions of and experiences with exposure to M30 pills as described by PWUD using pseudonymously posted text data from drug-related forums on the social media site Reddit.

Methods

Data for this study were collected as part of a larger study focused on fentanyl contamination of drugs from the social media site, [Reddit.com](https://www.reddit.com). Reddit is a collection of topical social forums ("subreddits") with content generated by pseudonymously registered

users, referred to as Redditors. Data were collected from 71 drug-related subreddits using 34 IMF-related search terms (Table 1), as generated previously in research by O'Donnell and Sumner (2019). Search terms included fentanyl, common IMF analogs, and common misspellings. Data extraction was performed using PRAW (Python Reddit API Wrapper), an automated program that uses Python to extract Reddit post text. Reddit posts were collected from January 1, 2021, up to the time of data collection on July 28, 2021, resulting in a total of 6,552 posts containing 1 or more IMF search terms. The main Reddit posts were collected and analyzed; no comments/replies were collected. For qualitative analysis, duplicate content (i.e., cross-posting to more than one subreddit) was removed, resulting in a sample of 4,573 posts. Using Stata 15.1 software, a random subsample of 500 was selected for thematic analysis. This study was exempted from IRB review as it was considered non-human subjects research with publicly available data. To protect the anonymity of post authors, the Reddit usernames were removed, and direct quotes were slightly altered to reduce the risk of searchability of posts (Ayers et al., 2018; Wilkinson and Thelwall, 2011).

The 500 randomly sampled IMF posts were screened for relevancy, to determine if they focused on IMF-related contamination. (Posts were excluded if they focused on purposeful use of IMF by itself as a drug of choice, contained news or video links only without text, or focused on the medical use of fentanyl). Relevant posts (N=226) were coded by two trained coders (a medical student and pre-medical student) using a codebook created a priori by the study team. These analysts double coded ~20% of posts (N=50) and met via video conference to resolve any coding discrepancies. Once the application of the codebook was agreed upon and the 50 posts reached full concordance, the coders analyzed the remaining content independently. During the coding process, the prevalence of posts making reference to “dirty 30’s”, “M30s”, and other known pseudonyms was recognized and a new code was created to capture this emerging phenomenon. Once all posts were coded for relation to M30s, the first author reviewed M30 coded data using thematic analysis. The first and senior author finalized the M30 related themes and the first author re-reviewed all data with these themes treated as codes to apply to the data.

Results

Eighty-five of 226 (37.6%) analyzed posts referred to “dirty 30’s,” “blue 30’s,” “fent 30’s,” “perc 30’s,” or “blue devils.” Three subsequent emergent themes relating to the unique subculture and emerging trends of pressed IMF M30 pills were identified. These themes and representative quotes are detailed below.

Theme 1: Suspicion of Contamination in Oxycodone Pills was Pervasive

In the sampled Reddit posts, the dominant attitudes were such that the contamination of M30 pills with IMF was pervasive. In other words, fentanyl contamination of M30 pills was considered a “known unknown,” and many Redditors essentially equated the M30 pills with fentanyl (n= 44 of 85 M30 posts):

“Kicking six per day “fake” blue M30, so ‘fent’”

“My girlfriend caught me last week in possession of about 70 pills, street Percocet aka fentanyl pressed pills”

The above examples demonstrate how these Redditors define the M30 pills by their fentanyl content, using the terms “M30” and “street Percocet” interchangeably with “fent.” In the post below, the Redditor directly associates a reference to oxycodone contaminated with fentanyl with the M30 pills:

“I’ve heard in many rap songs about popping “blue demons”, I did a bit of research and only found one thing on urban dictionary saying that it’s oxy laced with fent? Has anyone heard of these or done these? I assume they’re talking about pressed m30 since they are blue?”

The association of these pills with fentanyl was so strong, that some Redditors specifically sought out the M30 pills for their fentanyl content.

“First time trying fentanyl and it was kind of a let down. I recently got pressed M30 pills off the [redacted] and have been snorting them for a few days”

Additionally, there was evidence to suggest that some Redditors use M30s as their drug of choice, despite (or perhaps because of) their fentanyl content.

“So I’ve been clean for 47 days today and it is the longest I have been clean from everything in almost 15 years. I am an equal opportunity addict but my primary [drug of choice] was dirty 30’s and straight fent.”

“Hey there guys I am a fentanyl user and I’m in [redacted state] and out of pressed 30s...I am with family and the withdrawals are already pretty bad”

In general, the term M30 was a shorthand within the community for pressed pills, interchangeable with fentanyl and its associated risks. This in turn highlights the ubiquity of fentanyl pressed oxycodone pills—suspicion was likely pervasive because contamination was so common. This use of M30 pills was distinct from excluded posts about intentional use of fentanyl (“straight fent”).

Theme 2: Composition of Pills Evoked Anxiety.

Illicit markets with inconsistent and often unknown sources make it difficult to discern the specific amount of opioid and analog of fentanyl in a given pill. This led to a significant degree of questioning, uncertainty, and anxiety within this Reddit sample (n=34 of 85 posts):

“I was wondering if there is a big difference of the pressed M pills come with oxycodone not fentanyl. The [pharma] grade obviously come with every single pill having the exact amount whereas the presses do not. I guess my question is how can I tell what milligram is in a pressed one. Anyone have any advice?”

“Are pressed blues stronger or weaker than pharma blues? I know it can differ by how much fent and what kind, but on average, what is the consensus?”

Redditors were anxious to know the exact amount of fentanyl in their M30 pills, due to the ambiguous composition. Furthermore, suspicion of contaminants besides fentanyl was common, due to observed differences in look, taste, and feel:

“My question...is what is in the blues? I’m not looking for one word answers like fentanyl, carfent, (or any other analog) or any other research chem, because...there

is going to be some of one in some batches, something different as far as active chemical in another batch, and other batches with combinations or no active ingredients and just bunk pills. There is something similar in 75% or so of the pills, I hear many people describe it as a popcorn taste, and most people I talk to say it is the fentanyl that makes it taste like that, I would bet that they are wrong....I have had ones that were heavy “Popcorn taste” with little to no feel and ones that only taste like burning that are very strong, and vice versa”

“So a homie of mine got some suspect looking percs. They are definitely fake but are fakes always pressed using fentanyl? He took one and said he was fine he has no opioid tolerance whatsoever. Assuming fentanyl will kill the average person it is safe to assume they don’t have fent in them? If not fent what other opioids do street dealers usually use? Thank you”

While many Redditors were aware of the suspicious composition of their pills prior to consuming them, in some cases, contamination was not clear to the Redditor until after they had taken a pill:

“I stumbled upon an opportunity to buy M30s...I haven’t bought street drugs in years. Now I’m here, because I cut one 30mg in to 6 pieces, to take just 5mg every 6 hours and it feels like I’ve smoked heroin. It’s been years since I’ve had oxy...Is this possibly just the pure oxy hitting me very hard?...I know the person who sold them to me, but I don’t know where they got them. The “M” and “3” on them look the same as the photos of fake blue pills on Google. But they also look like they could be legit? ...Please help...1. If these are fake, and laced, how long after I’ve swallowed a small piece of an M30 (about 5mg), is it safe to assume I will not overdose? 2. Is this pill I’ve cut safe, because I haven’t overdosed from it yet? Or could the next 5mg sliver I cut from it be lethal? 3. I have two. One of which I haven’t cut at all. Could that one be totally different and kill me? 4. Is there ANY way of knowing for sure if an M30 is legit? 5. How long after dosing should I wait to go to bed? 6. Why am I like this? Any and all input would be so appreciated. Should I not risk it and just flush them?”

The above quote highlights the degree of anxiety that came with being unaware of the exact fentanyl composition of a given M30 pill. Not only was it possible for individuals naïve to the illicit market to unwittingly expose themselves to fentanyl, but once the exposure had taken place, the relative danger of the dose was unclear. The above quote also illustrates some of the third theme, related to protective strategies engaged.

Theme 3: M30 Mitigation and Testing Strategies.

While many individuals used subreddits to solicit advice on how to discern the relative quantity of fentanyl and other contaminants in their M30 pills, discussion of mitigation strategies also occurred (n= 25 of 85 posts). A common question focused on testing fentanyl composition by taking smaller doses as “test shots”:

“Dirty 30s. What do they look like. I have oxy 30 but it’s like a light green. It would be my first time and wondering if it is fentanyl. Should I just take a small piece just to be safe about it? Thanks”

“I’ve purchased obvious fake Oxy’s and Hydros before I could tell by how powdery and brittle they were, also not really having any pill taste. I ended up taking them anyways taking small pieces of the pill at a time and waiting to see if I felt anything. It took longer than the real thing but eventually I did feel them... Are these pills ever pressed with the real shit, or was it fent that I was feeling?... Is it even worth to test these?”

The final reference to “testing” in the quote above may also be alluding to fentanyl test strips, which were a common topic of conversation on Reddit and are provided by some overdose prevention programs. For example, some Redditors solicited advice on how to properly use their test supplies:

“Hey guys, I’m new to testing and I’m mainly looking to test Pressies/mdma. I’m looking to find out what the exact process is from some more experienced testers. I plan on purchasing a Full spectrum testing kit through [redacted] which includes fent strips. But I wanna make sure I am doing the testing properly. Can you help me understand what process you use for this specific testing? Thanks”

In addition to test strips, others asked about different home remedies (sometimes referred to as ‘folk methods’) to test if there was fentanyl within their pills, such as burning them on foil or analyzing how “brittle” they were:

“From what I understand, fent pressies and real Oxy30s burn differently when chased on foil. The pressies will leave a light brown trail while real pharma will be black. Is this a sure fire way to know if you got real pills?”

“The only thing I noticed was that [pressed pills are] pretty hard, not soft like the Roxie 10’s. I would provide pictures but no joke, they look perfectly legit. I even tried to break one open to “find the hotspot” but I do not see that either. I know this is probably a complete shot in the dark but we just want to know how to identify this sort of thing in the future”

Finally, some reached out to the community after experiencing adverse effects:

“I know, I know...don’t buy the 30’s. I’m well aware but it was all we could find and our source is reliable. From here on I’ll refer to myself and my one friend as Low-Tolerance and my other friend as High-Tolerance. Low-Tolerance only took a half and got incredibly hot, I’m talking sweating low-tol’s asses off but other than that everything felt normal. We can normally handle about 60mg of oxy in one day. High-Tolerance can handle roughly 100–120mg I’d say, he took a whole one he said but possibly slightly more. ...he got extremely cold, sleepy, couldn’t walk straight and literally sounded like he was possessed when he finally was able to speak up...We have experienced with oxy but not with fent, can someone please help us figure out what the side effects would be and all, maybe that will help us? We can’t find much info online other than “fentanyl is bad, stay away,”

The above quote highlights the further issue of variable tolerance to opioids. Not knowing the amount of fentanyl contained within a pill is particularly harmful as proper dosing becomes a game of chance. Varying degrees of opioid tolerance among PWUD, and for a single person over time, adds yet another variable of risk.

Discussion

The current study sought to understand perceptions of and experiences with IMF in pressed M30 pills in light of recent public and press attention, such as the current drug warnings by the DEA. Among PWUD in the online community of Reddit, the pressed nature of this specific opioid pill was commonly known and, to a degree, expected by the community reflected in our sample. However, it is unclear to what extent these pills have received the attention of broader public health professionals and agencies, and the broader population of PWUD. Redditors' anxieties over the pills commonly stemmed from their ambiguous composition. Inconsistent ratios of fentanyl make it difficult to safely dose based on individual opioid tolerance; while it is clear that IMF contamination may be inconsistent across a pill batch, it can also be inconsistent across individual pills (Health Canada, 2018; Washington State Department of Health, 2021). Namely, one portion of a pill may have a higher IMF concentration than another portion of the same pill (Washington State Department of Health, 2021), sometimes described as the "chocolate chip cookie effect." To help reduce anxiety and ensure safety amongst PWUD, accurate drug testing or safe supply are among the most reliable harm reduction strategies (Borden et al., 2022; Ivsins et al., 2020).

Redditors expressed interest in fentanyl mitigation strategies when consuming the M30 pills. Currently, fentanyl test strips (FTS) only test for the presence or absence of fentanyl. While this would be helpful to some of the PWUD in this study, there are caveats to test strips that limit their potential. The major limitation of FTS is that they only give a positive or negative result without providing any information as to the amount of IMFs present in a pill (McGowan et al., 2018). Redditors frequently asked about how to gauge the amount of fentanyl in a given sample, for which FTS would not be useful. Facilitating PWUD to have a clearer and more timely idea of the fentanyl content of the pills could inform decisions about use and dosing. There is also the potential issue of inconsistent contamination across an individual pill; if only a small portion of a pill that happens to not contain a measurable IMF contamination is tested, a negative result can provide a false sense of safety and higher risk of overdose in the case other portions of the pill are more highly contaminated (Washington State Department of Health, 2021). In light of this, real-time testing services that provide estimated concentration using best practices by trained staff and access to testing at harm reduction centers or via mobile services offer promise and are responsive to the needs of PWUD, and are being piloted in several cities in North America, including Baltimore, Chicago, Toronto, and Vancouver (Borden et al., 2022; Karch et al., 2021; Park et al., 2021; Scarfone et al., 2022).

IMF contamination in pills substantially contributes to prescription opioid involved overdose deaths. The number of overdose deaths attributable to IMF-contaminated pills is suspected to be increasing, especially in the western United States (O'Donnell et al., 2021). Furthermore, due to challenges in identifying counterfeit contaminated pills as the cause of deaths, these numbers are likely to be vastly underestimated (O'Donnell et al., 2021). Safe supply programs, which have expanded in Canada amidst the COVID-19 pandemic, could also serve to improve safety and lower anxiety amongst PWUD. Safe supply involves distributing pills that are ensured to be free of IMF contamination; Health Canada has

provided funds for safe supply programs since 2019, and funds have increased amidst the COVID-19 pandemic (Nowell, 2021; TIME, 2021). Preliminary evaluations of safe supply programs indicate reduced overdose death risk and improved overall health and well-being, suggesting that similar programs should be considered for expansion in the United States (Nowell, 2021).

In the absence of a legal safe supply, regulated supply of quality-controlled prescription opioids has also been described as mode of harm reduction, as it helps ensure that PWUD have access to non-contaminated pills, potentially lowering the risk of overdose death (Bardwell et al., 2021). Other harm reduction strategies, as described by the National Harm Reduction Coalition (NHRC) and seen in some of the Reddit cases studied here, include using pills in the presence of others, using tester shots, taking smaller amounts of sample, and naloxone training (National Harm Reduction Coalition, n.d.; Rouhani et al., 2019). To note, that while several of these strategies were illustrated in M30 Reddit content, naloxone was not a pervasive theme. One post mentioned experiencing an overdose and receiving naloxone as a result of receiving contaminated M30s, while another post mentioned having naloxone in the home when discussing using 30s to control opioid withdrawals. Other research has found limited discussion of naloxone on drug subreddits (Bunting et al., 2021; Overbeek & Janke, 2018). Posts from Redditors in this study also highlighted the possible role of stigma in finding reliable information on harm reduction strategies, as many Redditors had concerns over their consumption. Both enacted stigma (experiences of stigma from healthcare providers, the community, etc.) and anticipated stigma (expected experiences) can prevent PWUD from engaging in formalized harm reduction services (Earnshaw & Chaudior, 2007; Muncan et al., 2020). Specifically, common stereotypes that are enforced by stigma hold that PWUD are unconcerned for their health and wellbeing. However, data included here indicate that PWUD are clearly concerned about their safety, even while using risky substances. Stigma prevents the development of resources that could help PWUD looking to protect themselves, so they instead turn to Reddit for advice.

Some limitations are to be considered. These cases were drawn from Redditors who decided to post about these experiences and questions, who are not representative of the general population of PWUD. Although the demographics of the posters is unknown, prior research has found that Redditors are more likely to be younger men in the U.S. (Clement, 2020; Pew Research Center, 2019). Additionally, differences among the drug patterns and risks of PWUD who engage in social online communities, as compared to those who do not, are unknown. Demographics, locations, and information on drug use beyond the drug of discussion were not available. Further, the current research did not assess the accuracy or quality of the advice provided, as data was limited to the main post and did not explore the comments (i.e., conversations engaged in) after a Redditor sought advice. Despite these limitations, the current research provides timely insights to an emerging phenomenon.

Conclusion

The current study provided a real-time examination of an emerging drug trend that has not been thoroughly explored in the public health literature: M30 pills pressed with IMF. The three related themes found on Reddit demonstrate the awareness and anxiety associated with

IMF contamination. While many on Reddit were aware of fentanyl contamination, some individuals were unsure and spreading of information to those naive to M30 fentanyl content can limit harm. Access to a safer supply of opioids or adequate tests that can decipher the exact content of fentanyl in a given pill may help mitigate identified risks and play a vital role of harm reduction. Reddit appears to offer a safe space, for some, to network with other PWUD to discuss harm reduction strategies and anxieties surrounding the IMF drug market.

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References

- Ayers JW, Caputi TL, Nebeker C, & Dredze M.(2018). Don't quote me: Reverse identification of research participants in social media studies. *Npj Digital Medicine*, 1(1), 30. 10.1038/s41746-018-0036-2 [PubMed: 31304312]
- Bardwell G, Small W, Lavalley J, McNeil R, & Kerr T.(2021). "People need them or else they're going to take fentanyl and die": A qualitative study examining the 'problem' of prescription opioid diversion during an overdose epidemic. *Social Science & Medicine*, 279, 113986. 10.1016/j.socscimed.2021.113986
- Borden SA, Saatchi A, Vandergrift GW, Palaty J, Lysyshyn M, & Gill CG (2022). A new quantitative drug checking technology for harm reduction: Pilot study in Vancouver, Canada using paper spray mass spectrometry. *Drug and Alcohol Review*, 41(2), 410–418. 10.1111/dar.13370 [PubMed: 34347332]
- Bowen DA, O'Donnell J, & Sumner SA (2019). Increases in Online Posts About Synthetic Opioids Preceding Increases in Synthetic Opioid Death Rates: A Retrospective Observational Study. *Journal of General Internal Medicine*, 34(12), 2702–2704. 10.1007/s11606-019-05255-5 [PubMed: 31468343]
- Bunting AM, Frank D, Arshonsky J, Bragg MA, Friedman SR, & Krawczyk N.(2021). Socially-supportive norms and mutual aid of people who use opioids: An analysis of Reddit during the initial COVID-19 pandemic. *Drug and alcohol dependence*, 222, 108672. [PubMed: 33757708]
- Byerley BL (2021, May 21). DEA Issues Warning Over Counterfeit Pills. <https://www.dea.gov/press-releases/2021/05/21/dea-issues-warning-over-counterfeit-pills>
- Ciccarone D.(2021). The rise of illicit fentanyls, stimulants and the fourth wave of the opioid overdose crisis. *Current Opinion in Psychiatry*, 34(4), 344–350. 10.1097/YCO.0000000000000717 [PubMed: 33965972]
- Clement J, 2020. Reddit: Traffic by Country. Statista. URL <https://www.statista.com/statistics/325144/reddit-global-active-user-distribution/> (accessed 9.10.20).
- Earnshaw VA, & Chaudoir SR (2009). From conceptualizing to measuring HIV stigma: a review of HIV stigma mechanism measures. *AIDS and Behavior*, 13(6), 1160–1177. [PubMed: 19636699]
- Forget J.(2021, June 29). DEA Washington Division Issues Warning: "One Pill Can Kill". <https://www.dea.gov/press-releases/2021/06/29/dea-washington-division-issues-warning-one-pill-can-kill>
- Health Canada. 2018. Health Canada reminds Canadians of the limitations of fentanyl test strips being used to check street drugs before consumption [Press Release]. <https://recalls-rappels.canada.ca/en/alert-recall/health-canada-reminds-canadians-limitations-fentanyl-test-strips-being-used-check>
- Ivins A, Boyd J, Beletsky L, & McNeil R.(2020). Tackling the overdose crisis: the role of safe supply. *International Journal of Drug Policy*, 80, 102769.

- Karch L, Tobias S, Schmidt C, Doe-Simkins M, Carter N, Salisbury-Afshar E, & Carlberg-Racich S.(2021). Results from a mobile drug checking pilot program using three technologies in Chicago, IL, USA. *Drug and Alcohol Dependence*, 228, 108976. 10.1016/j.drugalcdep.2021.108976
- Kirsh K, Peppin J, & Coleman J.(2012). Characterization of prescription opioid abuse in the United States: focus on route of administration. *Journal of Pain & Palliative Care Pharmacotherapy*, 26(4), 348–361. [PubMed: 23675595]
- Moakley P.(2021, October 25). The ‘Safe Supply’ Movement Aims to Curb Drug Deaths Linked to the Opioid Crisis. URL <https://time.com/6108812/drug-deaths-safe-supply-opioids/>
- County Multnomah. (2021, April 20). Health officials warn of rise in deaths from counterfeit pills. URL <https://www.multco.us/multnomah-county/news/health-officials-warn-rise-deaths-counterfeit-pills>
- Muncan B, Walters SM, Ezell J, & Ompad DC (2020). “They look at us like junkies”: influences of drug use stigma on the healthcare engagement of people who inject drugs in New York City. *Harm reduction journal*, 17(1), 1–9. [PubMed: 31906957]
- National Harm Reduction Coalition, n.d. Fentanyl. URL <https://harmreduction.org/issues/fentanyl/>
- Nowell M, 2021. Safe supply: What is it and what is happening in Canada? | CATIE - Canada’s source for HIV and hepatitis C information [WWW Document]. URL <https://www.catie.ca/en/pif/spring-2021/safe-supply-what-it-and-what-happening-canada> (accessed 3.25.21).
- O’Donnell J, Tanz LJ, Gladden RM, Davis NL, & Bitting J.(2021). Trends in and Characteristics of Drug Overdose Deaths Involving Illicitly Manufactured Fentanyls—United States, 2019–2020. *MMWR. Morbidity and Mortality Weekly Report*, 70(50), 1740–1746. 10.15585/mmwr.mm7050e3 [PubMed: 34914673]
- Overbeek D, & Janke A.(2018). 360 characteristics of posts of opioid users on Reddit, an online social media forum, an area for improved harm reduction. *Annals of Emergency Medicine*, 72(4), S142.
- Park, J. N., Frankel, S., Morris, M., Dieni, O., Fahey-Morrison, L., Luta, M., Hunt, D., Long, J., & Sherman, S. G. (2021). Evaluation of fentanyl test strip distribution in two Mid-Atlantic syringe services programs. *International Journal of Drug Policy*, 94, 103196. 10.1016/j.drugpo.2021.103196
- Pew Research Center, 2019. Who Uses YouTube, What’s App, and Reddit. URL <https://www.pewresearch.org/internet/chart/who-uses-youtube-whatsapp-and-reddit/> (accessed 9.11.20).
- Rouhani S, Park JN, Morales KB, Green TC, & Sherman SG (2019). Harm reduction measures employed by people using opioids with suspected fentanyl exposure in Boston, Baltimore, and Providence. *Harm Reduction Journal*, 16(1), 39. 10.1186/s12954-019-0311-9 [PubMed: 31234942]
- Scarfone KM, Maghsoudi N, McDonald K, Stefan C, Beriault DR, Wong E, Evert M, Hopkins S, Leslie P, Watson TM, Werb D, & Toronto’s Drug Checking Service Working Group. (2022). Diverse psychotropic substances detected in drug and drug administration equipment samples submitted to drug checking services in Toronto, Ontario, Canada, October 2019–April 2020. *Harm Reduction Journal*, 19(1), 3. 10.1186/s12954-021-00585-2 [PubMed: 35012557]
- United States Drug Enforcement Administration. (2021, December 16). DEA Reveals Criminal Drug Networks Are Flooding the U.S. with Deadly Fentanyl. <https://www.dea.gov/press-releases/2021/12/16/dea-reveals-criminal-drug-networks-are-flooding-us-deadly-fentanyl>
- Washington State Department of Health. 2021. Overdose rates on pace to break another record in 2021 [Press Release]. <https://www.doh.wa.gov/Newsroom/Articles/ID/2870/Overdose-rates-on-pace-to-break-another-record-in-2021>
- Wilkinson D, & Thelwall M.(2011). Researching personal information on the public web: Methods and ethics. *Social science computer review*, 29(4), 387–401.

Table 1.

IMF related search terms

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| fent, butryfentanyl, fentanils, carfentanil, fentanyls, fentnyl, fetanyl, furanylfentanyl, fentantyl, fentynal, butyryl, lofentanyl, carfentanyl, sufentanil, truckfentanyl, butyrfentanyl, fentanyli, fentynyl, carfent, ocfentanyl, fentayl, furanyl, fentany, fentanyl, acrylfentanyl, carafentanyl, fentynl, sufentanyl, butyr, fentanylso, acetylfentanyl, busfentanyl, fentanayl, fentanyl |
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