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BRIEF REPORT

Intentional and Unintentional Fentanyl Use Among a Cohort of Sexual and Gender Minorities Assigned Male at Birth in Chicago

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Abstract

Background Fentanyl use in the Midwest is rising, and there is data to suggest that this is a particular area of concern among sexual and gender minorities assigned male at birth (SGM-AMABs). However, little is known about intentional and non-intentional use among this population. The goal of this study was to document rates of fentanyl use and associated indicators (e.g., mode of administration) among a cohort of SGM-AMABs.

Method Participants ($N=924$) were drawn from the RADAR cohort study of SGM-AMABs recruited from the Chicago metropolitan area. All cohort members were designated male at birth and were required to be a sexual minority (i.e., individuals who are gay, bisexual, queer; have same-sex attraction/behavior; or endorse another non-heterosexual identity), a gender minority (i.e., individuals who are transgender, nonbinary, or another non-cisgender identity), or both. All participants completed a urine drug screen as well as self-report items regarding fentanyl use, mode of administration, opioid use, injection history, and overdose via REDCap survey instrument.

Results Of the 924 total participants, 0.3% ($N=3$) self-reported fentanyl use, and 0.5% ($N=5$) tested reactive via urine drug screen for fentanyl. Other substances of use were relatively common, and self-report fentanyl use was non-overlapping with urine drug screens for fentanyl.

Conclusions Although preliminary, these analyses suggest that fentanyl exposure is rare in this population. However, better screening methods to identify those who are using fentanyl by other modalities—including unintentional use—may be warranted.

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Fentanyl use is steadily increasing at a concerning rate (National Institute on Drug Abuse, 2023), particularly during/after the COVID-19 pandemic (CDC, 2020; Ghose et al., 2022), with deaths attributed to synthetic opioids rising from 11.4 per 100,000 in 2019 to 21.8 per 100,000 in 2021. This rise is particularly dramatic in the Midwest region of the USA (Ouellet, 2020); in Chicago, fentanyl-related deaths have risen over 1570% during the period from 2015 to 2021 (i.e., from 103 to 1721 cases; Chicago Department of Public Health, 2021; Preckwinkle et al., 2021), and fentanyl was involved in 90% of opioid-related overdose deaths in Chicago in the first half of 2021 (Chicago Department of Public Health, 2021). However, this use is not distributed equally throughout the population; opioid misuse and deaths from opioids are higher among men and people assigned male at birth (Butelman et al., 2023; Silver & Hur, 2020). In addition, recent data suggests that self-reported non-prescription opioid use is *particularly* prevalent among young adults (18–25 years) and sexual minority men (Capistrant & Nakash, 2019; Paschen-Wolff et al., 2023). For instance, the National Survey on Drug Use and Health found a 1.8 times higher odds of lifetime heroin use among bisexual men when compared to heterosexual men (Schuler et al., 2019). And the Chicago Youth Risk Behavior Survey found elevated rates of self-reported heroin use for young gay and bisexual males (32.5%) compared to heterosexual males (3.2%; Weaver et al., 2018). There is currently no data on non-prescription opioid use among gender minorities to our knowledge (Paschen-Wolff et al., 2023).

It is important to consider the reasons behind the dramatic rise in fentanyl use, particularly among sexual minority men. Although self-initiated use is a commonly cited reason for the increase in fentanyl use, opioids have historically not been an area of disparity among sexual and gender minorities assigned male at birth (SGM-AMABs—individuals assigned male at birth based on anatomical characteristics who are non-heterosexual and/or non-cisgender; Capistrant & Nakash, 2019; McCabe et al., 2022; Mimiaga et al., 2010). This suggests that SGM-AMABs may be exposed to fentanyl through another mechanism, such as unintentional use. Importantly, because fentanyl is cheap, profitable, and highly addictive, it may be mixed with other substances (e.g., cocaine, methamphetamines) that *are* relatively common drugs of use among SGM-AMABs (CDC, 2018; Ouellet, 2020). Fentanyl can also be taken intentionally via oral, intranasal, oral-transmucosal, intravenous, or transdermal routes of administration (Lötsch et al., 2013; National Center for Injury Prevention & Control, 2023; National Institute on Drug Abuse, 2021). These multiple avenues of exposure raise the possibility that, in addition to bona fide increases in fentanyl use, SGM-AMABs may be subject to unintentional exposure with other substances. Given increasing public reporting on opioid use among sexual minority men (Murez, 2023; Ryan, 2021), it is important to examine whether rates of fentanyl use may be attributable to other well-documented substance use disparities among SGM-AMABs (e.g., stimulants) or whether this represents a separate area of health disparity. The objective of this exploratory brief report was to document rates of fentanyl use assessed via self-report and urine drug screen in a cohort of SGM-AMABs. We also describe mode of use, other substance use, injection drug use, and overdose in this high-risk population, to further elucidate types and sources of potential fentanyl exposure.

Methods

Data come from the RADAR longitudinal cohort study of SGM-AMABs living in the Chicago metropolitan area. The primary objective of this cohort is to understand multilevel, syndemic health issues associated with HIV among diverse SGM-AMABs. Further details on RADAR have been previously described (Mustanski et al., 2018).

Design and Recruitment

Sampling was conducted iteratively. First, a subset of participants from two cohorts, Q2 and Crew450, who were first recruited in 2007 and 2010, respectively, were invited to enroll in the cohort. In 2015, a third cohort was recruited specifically for RADAR using venue-based, dating app, and social media (e.g., Facebook) advertisements. Incentivized snowball sampling of partners and peers was additionally used for recruitment. Recruitment of underrepresented groups within SGM-AMAB research (e.g., racial/ethnic minorities, gender minorities) was achieved using similar recruitment methods, emphasizing inclusion in images and messaging.

Cohort inclusion criteria were determined via a screening survey and confirmed in an intake phone call. Cohort members were required to be between 16 and 29 years of age at recruitment, assigned male at birth, English speaking, and reporting a sexual encounter with a male in the previous year or identification as gay, bisexual, queer, pansexual, or unsure/questioning. Gender minorities (e.g., transgender women, nonbinary individuals), including those identifying their sexual orientation as straight, were also eligible.

Data were collected using a health survey administered via a computer-assisted self-interview (CASI), with repeated study visits occurring every 6 or 12 months. Data collection is ongoing. Self-report fentanyl use measures included in this analysis were administered to study participants starting in March 2019. Fentanyl urine screening was added as part of routine urine drug screening in March 2019.

Measures

Participants were administered one-time fentanyl urine screen tests (Germaine Laboratories AimScreen Fentanyl (FEN) DipDevice test).[1] The test is a rapid chromatographic immunoassay and is intended only as a preliminary analytic urine test for detection of fentanyl (detection level 200 ng/mL). It has good sensitivity and precision (Bergh et al., 2021).

Participants also completed self-report measures of fentanyl and other drug use, including mode of administration (e.g., injection, smoking). First, participants responded to an item assessing past 6-month use of fentanyl ("Have you used fentanyl without a prescription (by any route) in the last six months?"). This measure was created from items being administered by other Collaborating Consortium of Cohorts Producing NIDA Opportunities (C3PNO; Gorbach et al., 2021). Items were originally developed to be applicable to several C3PNO cohorts assessing substance use among groups vulnerable to HIV, and have not been formally psychometrically evaluated.

Participants also responded to several items assessing history of drug use ("In the past 6 months, have you ever used any of the following non-prescription drugs?"), injection drug use ("In the past 6 months, have you used a needle to inject a drug not prescribed by a doctor?"), and overdose ("In the last 6 months, have you overdosed by accident?"). If participants responded in the affirmative to items assessing drug use, overdose, or injection drug use, follow-up items assessed which drugs were used, intended to be used at the time of overdose, and/or injected. These items were analyzed using frequency statistics in SPSS v28. No groups were created, and analyses were not preregistered.

[1] Participants also received urine testing for a range of other substances including marijuana, opioids, MDMA, and cocaine which were not of interest to this study. The detection timeframe for these substances ranges from 2 to 14 days.

Results

From the full cohort ($N=1273$), analytic data for this study consisted of the first study visit at which participants completed urine screening ($N=924$). Individuals in the analytic sample were, on average, 24.35 years old (SD = 3.35 years). The sample was diverse in terms of racial/ethnic identity—a majority ($N=305$, 33%) of individuals self-identified as Black/African American, followed by individuals self-identified as Hispanic/Latinx ($N=293$, 31.7%), White ($N=223$, 24.1%), Asian ($N=29$, 3.1%), multi-racial, ($N=65$, 7.0%), American Indian/Alaska Native ($N=3$, 0.3%), or another race/ethnicity not listed ($N=6$, 0.6%). Individuals self-identified as gay ($N=614$, 66.5%), bisexual ($N=137$, 14.8%), queer ($N=87$, 9.4%), straight/heterosexual ($N=39$, 4.2%), unsure/questioning ($N=15$, 1.6%), pansexual ($N=14$, 1.5%), lesbian ($N=2$, 0.2%), or another sexual orientation not listed ($N=16$, 1.7%). Most participants were cisgender ($N=791$, 85.6%), although some self-identified as gender minorities—transgender women ($N=67$, 7.3%), nonbinary ($N=15$, 1.6%), gender non-conforming ($N=3$, 0.3%), genderqueer ($N=3$, 0.3%), or another gender not listed ($N=45$, 4.9%). The modal level of education was some college ($N=426$, 46.1%).

Urinalysis-Derived Fentanyl

$N=5$ participants were reactive on fentanyl urine drug screens. Among these five individuals, none self-reported fentanyl or heroin use in the past 6 months, although $N=4$ self-reported marijuana use, $N=1$ reported using Ketamine, and $N=1$ reported using poppers in the past 6 months. One of these five participants self-reported not using any illicit substances in the past 6 months. On separate questions related to non-illicit substances, one of these five individuals reported using prescription painkillers in the past 6 months, but this was not the same person who endorsed not using any illicit substances in the past 6 months. These individuals were 80% gay and 80% cisgender. In terms of race/ethnicity, these individuals approximately equally self-identified as White and Black/African American.

Self-Reported Fentanyl

$N=3$ individuals self-reported using fentanyl in the past 6 months. Two reported snorting, bumping, or sniffing, whereas one reported using fentanyl via pill. All these individuals screened urine-negative for fentanyl. Two-thirds of these individuals were cisgender, sexual orientations were diverse (0% gay), and all reported being Black or African American.

Self-Reported Other Substances

In terms of other drug use, injection drug use, and history of overdose in the past 6 months, most participants ($N=668$; 72.29%; Table 1) reported marijuana use, although significant numbers also reported using crack/cocaine ($N=131$; 14.18%), poppers ($N=211$; 22.84%), and/or ecstasy ($N=101$; 10.93%). Only $N=5$ participants reported injection drug use; of these, 80% ($N=4$) reported injecting crystal methamphetamine, whereas $N=1$ (20%) reported injecting another drug not listed. Lastly, a total of nine participants (0.97%) reported experiencing a total of ten accidental overdoses in the past 6 months. Items assessing substance at the last occasion of accidental overdose were not solely administered to those reporting overdose in the past 6 months; in total, $N=45$ individuals endorsed

Table 1 Drug use in the past 6 months ($N=924$)

	N	Percentage
Fentanyl use		
Self-reported	3	0.3%
Urinalysis	5	0.5%
Other drug use		
Marijuana	668	72.29
Synthetic marijuana	7	0.76
Cocaine or crack	131	14.18
Heroin	2	0.22
Methamphetamine	26	2.81
GHB	20	2.16
Ketamine	24	2.60
Poppers	211	22.84
Inhalants	12	1.30
Psychedelics or hallucinogens	95	10.28
Ecstasy	101	10.93
Other	6	0.65
None	215	23.27

substances at the time of last overdose. Specifically, $N=11$ reported overdosing by alcohol, $N=1$ each by crack cocaine and sleeping pills, $N=2$ each by ketamine and benzodiazepines, $N=4$ each by cocaine and prescription painkillers, $N=5$ each by heroin and an unknown substance, $N=7$ by crystal meth, and $N=20$ by another substance not listed. The modal (and minimum) number of overdose substances was one, and the maximum was five.

Discussion

Long-term evidence of increased levels of drug use among SGM-AMABs compared to cisgender/heterosexual men, coupled with some emerging data and media speculation that this pattern also applies to synthetic opioids, motivated our study (Murez, 2023; Ryan, 2021; Weaver et al., 2018). In a diverse sample of SGM-AMABs, we assessed fentanyl use via both urine screen and self-report. We observed very low rates of fentanyl use in both methods of measurement, although the urine screen was only able to detect past 2-to-5-day use. Perhaps unsurprising given the low rates of use in the cohort overall, the low rate of correspondence between self-reported and urine-screened fentanyl use in this analysis mirrors reports that fentanyl may be mixed with other substances, particularly cocaine and methamphetamines (Los Angeles County Department of Public Health, 2018; Ouellet, 2020). Thus, individuals may not know that they are consuming fentanyl. This indicates that pre-screening by self-reported history of opioid (mis)use or same-visit self-report of opioid (mis)use would have been an ineffective method of identifying these cases of fentanyl exposure, as this would have missed all five participants who screened positive. Further, two of three individuals who self-reported fentanyl

use reported snorting the substance, whereas the other reported taking it by pill, indicating that intentional fentanyl use should be assessed not only in terms of injection drug use, but in all modalities. This is an important issue, as the five individuals who screened positive for fentanyl use were recently (and presumably unknowingly) exposed to a highly potent—and potentially fatal—substance. Indeed, of the participants who urine-screened positive for fentanyl, the predominant self-reported substance of use was marijuana, and it is possible that fentanyl exposure was unintentional in the larger context of substance use. This is supported by prior reports (Los Angeles County Department of Public Health, 2018; Ouellet, 2020), and remains a fruitful direction for further research. However, because we were unable to perform confirmatory fentanyl testing, it is important to consider the possibility of false positives.

This analysis is limited particularly by the 6-month timeframe used in assessing self-reported use, which could have missed some instances of fentanyl exposure due to recall. Our analysis relies partly on this self-reported use, while research has shown individuals may not know (i.e., are unaware) when the drug they are using contains fentanyl (O'Donnell et al., 2017, 2019), and the urine screens we employed only detect use within the past week or so. Additionally, our study drew from a relatively circumscribed sample of young adults from the community, and findings may not generalize to the larger population outside of Chicago or to individuals in other age groups. Lastly, our findings differ from prior research, and this could be—at least in part—attributable to the differences in sampling, particularly because prior studies have not explicitly assessed gender identity, and few have included any gender minority individuals. These limitations should be addressed in future research by assessing individuals in other metropolitan areas, age ranges, and using different assessment frequencies.

Conclusions

Here, we report the first data on rates of fentanyl use and exposure among SGM-AMABs using both self-reported and biological assessments. Overall, we observed low rates of self-reported use and exposure via urine drug screens, which contradicts previous findings in the Chicago Youth Risk Behavior Survey and public speculation about opioid use among SGM-AMABs. However, our analysis points to concerns regarding unintentional fentanyl use that is only observable using this type of multi-method research. Our findings also carry several implications. Research conducted among at-risk individuals could supplement self-report measures of injection fentanyl use with measures of fentanyl use via other modalities and urine screening for fentanyl. Future studies may be well-served to assess networks where urine exposure is detected to ascertain a better understanding of fentanyl use in Chicago and across the USA.

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Data, Materials, and Code Availability The data, materials, and code that support the findings of this study are available on request from the corresponding author. These are not publicly available due to privacy or ethical restrictions.

Declarations

Ethics Approval and Consent to Participate All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all individual participants included in the study. The study was approved by the Northwestern University IRB (IRB STU00087614).

Conflict of Interest The authors declare no competing interests.

Disclaimer The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agency.

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