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Reaching people who use drugs with sexual and reproductive healthcare through syringe services programs: potential promise and missed opportunities

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Abstract

Background People who use drugs are at elevated sexual and reproductive health risk but experience barriers to services. Syringe services programs (SSP) are an important venue to provide integrated health services. Few studies have examined SSP use within intersecting gender, racial, and ethnic groups, including by injection drug use (IDU), and differences in sexual and reproductive health among these groups.

Methods Within a cohort study among people who use unprescribed opioids in New York City, we conducted a nested cross-sectional study from November 2021-August 2022 assessing sexual health with a survey ($n=120$). The parent study measured baseline characteristics, and the cross-sectional study survey measured self-reported past-year SSP use and sexual and reproductive health. We estimated SSP use within gender, racial, and ethnic groups by IDU, and the prevalence of sexual and reproductive health outcomes by gender, race, ethnicity, and SSP use.

Results Among men ($n=61$) and women ($n=54$), SSP use was disproportionately low among Black participants irrespective of IDU. Women reporting SSP use had a higher prevalence of multiple, new, sex trade, and/or casual sex partners, history of STI symptoms, and lack of effective STI prevention, although women who did not use SSP had non-negligible levels of risk with variation between racial and ethnic groups. Among men, sexual and reproductive health varied across racial and ethnic groups but not as clearly by SSP use.

Conclusions SSP offer opportunity to address elevated STI risk among people who use drugs but may miss certain intersecting gender, race, and ethnic groups.

Keywords Syringe service programs, Sexual and reproductive health, Sexually transmitted infections, Race, Ethnicity, Gender

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Introduction

People who use drugs have higher risk of sexually transmitted infections (STI) and related adverse sexual and reproductive health outcomes [1–10]. Drug use contributes to sexual risk behaviors and STI [4, 11, 12], and drug use is increasingly reported among people diagnosed with an STI [6]. People who inject drugs may be at particularly elevated risk compared to those who do not inject [5, 13]. There is a hypothesized link between the dramatic increases in drug use and related consequences (i.e., overdose) and rising rates of STI and adverse sequelae (i.e., congenital syphilis) in the United States (US) [14–16]. We need innovative approaches to reach people who use drugs with sexual and reproductive health services to reduce harms and improve health.

One potential venue to reach people who use drugs with health services are syringe services programs (SSP). Predominant focus of SSP in the early years of their implementation in the US was providing sterile syringes to prevent spread of blood-borne infections like HIV and hepatitis C virus (HCV) [17]. Presently, the mission of many SSP has expanded to provide a range of harm reduction services across a variety of health domains, including overdose education and naloxone distribution, but integrated services related specifically to sexual and reproductive health are less common. Most systematic assessments of the breadth of services provided by SSP in the US were conducted over a decade ago [18–20], but a 2019–2020 survey of SSP reported that they almost universally offered sexual health supplies (e.g., condoms), but only approximately 60% offered on-site HIV and/or HCV testing, about half offered on-site STI testing, and one-third offered on-site STI treatment [21].

Although research suggests that integrating sexual and reproductive health services at SSP can reach a priority population of women who inject drugs and is feasible and acceptable to clientele and providers [22, 23], gaps remain in our understanding of the potential impact of this approach. It is estimated only half of people who inject drugs in the US access SSP and this varies significantly by geography, race, ethnicity, and/or gender [17, 24–28]. There is also little evidence available regarding use of SSP among the broad population of people who use drugs (i.e., not only those who inject), including within intersecting gender, racial, and ethnic groups. Further, no known studies have explored differences in sexual and reproductive health experiences and conditions among those who use SSP versus those who do not use SSP among people who use drugs regardless of route of drug administration. Because STI and adverse sexual and reproductive health outcomes disproportionately affect marginalized groups at the intersections of substance use, gender, race, and ethnicity, it is vital to understand who may be reached and who may be missed when integrating sexual and reproductive health services at SSP to inform additional approaches to reduce health inequities among people who use drugs.

Motivated by these gaps, this study explored the gender, racial, and ethnic variation in use of SSP and in sexual and reproductive health among people who use SSP compared to those who do not among people who use SSP within a sample of people who use unprescribed opioids in New York City.

Methods

Study design and sample

We conducted a nested cross-sectional study within a parent longitudinal cohort study among people who use unprescribed opioids in New York City, which has been described [29]. Briefly, from April 2019-March 2020, 575 adults who use unprescribed opioids were recruited and enrolled via respondent-driven sampling. Unprescribed opioid use was defined as self-reported use of heroin, fentanyl, and prescription opioids without a prescription in the past three days and was verified using rapid urinalysis [29]. A baseline survey assessed sociodemographic characteristics and substance use history. Participants completed monthly surveys measuring overdose risk and experiences for 24 months.

Parent study participants were invited via email and/or text message from November 2021-August 2022 to complete a nested cross-sectional study featuring a one-time online survey; 120 participants enrolled. The survey assessed sexual and reproductive health experiences, conditions, and care, and participants could opt-in to receive a self-collected STI testing kit [30]. Parent study baseline data were linked to the cross-sectional study data via study ID number. Activities were approved by NYU Grossman School of Medicine Institutional Review Board.

Measures

We measured sociodemographic characteristics at parent study baseline. Substance use, unless otherwise noted, was measured in the parent study and includes past 30-day use [e.g., cocaine, marijuana, injection drug use (IDU)]; number of years using opioids; estimated number of opioid use events, calculated as the self-reported number of days using opioids multiplied by the self-reported average number of times opioids were used per day; DSM-5 criteria for opioid use disorder (OUD) and alcohol use disorder (AUD); [31] and lifetime overdose history. In the cross-sectional study, participants reported past-year SSP use, and among those who reported using SSP, participants reported the sexual and reproductive health services they received there.

Past 12-month sexual and reproductive health experiences, conditions, and care were measured in the nested

cross-sectional study. These include multiple (≥2), new, sex trade, and casual sexual partnerships. Participants reported if they had ever had sex at a sex party/group sex event. Separately, men and women were provided a list of potential STI symptoms (e.g., unusual discharge, pain when urinating, sores) and categorized as having potential STI symptoms if they selected≥1 symptom. Participants were provided a list of STI and/or pregnancy prevention methods and selected method(s) they/their partners used to prevent STI. We categorized methods based on lack of effective STI prevention [i.e., nothing used, oral birth control, vasectomy, injectable contraception (e.g., Depo-Provera), vaginal contraceptive ring (e.g., Nuvaring), contraceptive patch, diaphragm, intrauterine device, withdrawal/pulling out] versus effective (i.e., condoms). Women alone reported vaccination for human papillomavirus (HPV) and most recent pelvic examination, and men alone reported most recent prostate and testicular examination, which were dichotomized as never/non-recent (i.e., ≥3 years ago) versus recent (≤2 years ago).

Analyses. Of the 120 nested cross-sectional study participants, two lacked study ID numbers. Of the 118 participants, three were excluded from analyses due to missing data on race and ethnicity.

We used Stata 17.0 to conduct analyses. We calculated the prevalence of IDU and SSP use stratified by race and ethnicity among women and men separately. We described the proportion of participants reporting SSP use by sociodemographic characteristics and substance use history using univariate and tabular bivariate analyses among the total sample and stratified by gender. Separately among women and men, we estimated the prevalence of sexual and reproductive experiences, conditions, and care overall and among those who did and did not report SSP use stratified by race and ethnicity; while this analysis is descriptive, we reported the results when statistical differences were observed based on the chi-square test.

Results

Among the 115 participants, all identified as cisgender and 54 were women and 61 were men. Participants were 46 years of age on average, and 30% were White, 26% were Black, and 43% were Hispanic/Latinx. Approximately 70% reported IDU. Past-year SSP use was reported by 53% of White participants, 21% of Black participants, and 47% of Hispanic/Latinx participants, and by approximately 42% of men and 40% of women; results were similar when restricting to those reporting IDU (data not shown in tables/figures).

However, as displayed in Fig. 1, there was variation in SSP use and IDU among intersecting gender, racial, and ethnic groups. Among women, a larger proportion of White and Hispanic/Latina women reported SSP use (46.7% and 52.3% respectively), most of whom also reported IDU, compared to Black women (25.0%), including no SSP use reported among Black women who did not report IDU. Among men, the largest proportion of SSP use was reported among White men (58.8%), followed by Hispanic/Latino men (39.3%); SSP use was low among Black men (15.4%), though notably all Black men who reported SSP use did not report IDU.

Table 1 includes the descriptive statistics for the sociodemographic and substance use characteristics between those who reported SSP use and those that did

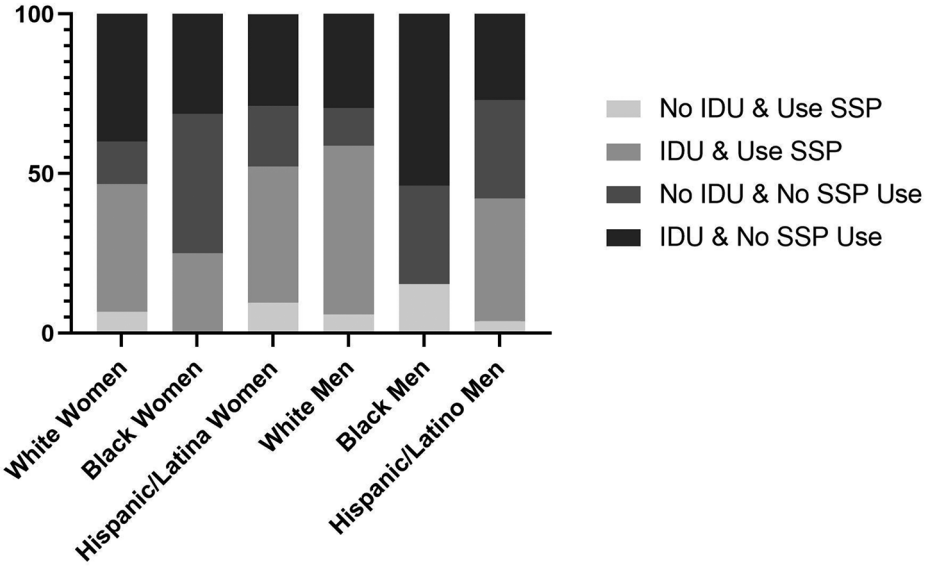

Fig. 1 Injection Drug Use and SSP Use by Gender, Race, and Ethnicity among People who Use Unprescribed Opioids in New York City ($n=115$)

Table 1 Sociodemographic and substance use characteristics associated with SSP use among the total sample and by gender ($n = 115$)

Factor	% Visited SSP in Past Year among Total Sample (n=115)	% Visited an SSP in Past Year among Women (n=54)	% Visited an SSP in Past Year among Men (n=61)
Age			
46 or Younger	42.3	50.0	33.3
47 or Older	40.0	34.6	44.1
Currently Homeless			
No	36.7	36.1	37.2
Yes	51.5	56.2	46.7
Education Status			
Less than HS	32.1	30.8	33.3
High School/GED	39.1	41.7	35.0
More than HS	50.0	53.3	47.8
Employment Status			
Not Employed	40.9	38.6	43.2
Employed	43.5	62.5	30.8
Marital Status			
Not Married	39.7	43.8	36.4
Married/Cohabiting	44.1	40.0	50.0
Ever Incarcerated			
No	28.0	25.0*	33.3
Yes	44.8	50.0	40.8
Health Insurance Coverage			
None or Private	60.0	50.0	66.7
Medicaid or Medicare	39.6	42.0	37.0
Saw a Healthcare Provider in Past 12 Months			
No	55.6	66.7	40.0
Yes	39.2	40.8	38.5
Used cocaine in past 30 days			
No	33.9	40.7	25.9**
Yes	48.2	44.0	51.6
Used crack cocaine in past 30 days			
No	37.8**	31.6**	42.9
Yes	50.0	71.4	31.2
Used marijuana in past 30 days			
No	50.8*	51.6*	48.4
Yes	28.6	28.6	29.6
Misused benzodiazepine in past 30 days			
No	35.4*	40.5	31.7*
Yes	54.6	46.7	58.8
Number of years using illicit opioids			
15 or Fewer Years	34.2	35.0	31.6
16 – 26 Years	47.6	60.0	36.4
27 – 35 Years	52.0	60.0	46.7
36 Years or More	33.3	18.2	46.2
Number of opioid use events in the past 30 days			
30 or Fewer	24.1*	25.0	25.0
31 – 60	44.0	50.0	36.4
61 or More	52.8	55.0	50.0
Opioid Use Disorder			
Mild/Moderate	15.4**	22.2	0.0*
Severe	44.8	43.6	45.6
Alcohol Use Disorder			

Table 1 (continued)

Factor	% Visited SSP in Past Year among Total Sample (n=115)	% Visited an SSP in Past Year among Women (n=54)	% Visited an SSP in Past Year among Men (n=61)
Mild/Moderate	41.4	40.4	42.0
Severe	36.4	50.0	28.6
Lifetime Opioid Overdose			
No	27.7**	26.7**	28.6**
Yes	59.6	63.6	56.5

*Indicates chi-square test p-value <0.10

**Indicates chi-square test p-value <0.05

not among the total sample and by gender. A larger proportion of younger women reported SSP use (50%) compared to older women (35%). People who were currently homeless and with higher education attainment more commonly reported SSP use (homeless: 52%, not homeless: 37%; more than high school education: 50%, less than high school: 32%). More employed women reported SSP use (62%) compared to unemployed women (39%). SSP use was similar by marital status among women, whereas among men, the proportion reporting SSP use was higher among those who were married (married: 50%, not married: 36%). People who had been incarcerated and those with no or private insurance more commonly reported SSP use (incarcerated: 45%, not incarcerated: 28%; no/private insurance 60%, Medicare/Medicaid: 40%). SSP use appeared to differ by substance use and this varied by gender. SSP use was more commonly reported among men who used cocaine (52%) and benzodiazepine (59%) and women who used crack cocaine (71%) compared to those who did not report use of those substances. Those reporting marijuana use had a lower proportion of SSP use (29%) compared to those who reported no marijuana (51%). Women who had used unprescribed opioids for the longest period of time had the lowest proportion of SSP use (18%). In the total sample, SSP use was more commonly reported among those reporting higher frequency of opioid use (53%), severe OUD (45%), and history of overdose (60%).

Among women, prevalence of past-year adverse STI and sexual and reproductive health experiences, conditions, and care appeared higher among those who used SSP compared to those who did not (Fig. 2a). However, these sexual and reproductive health indicators were still prevalent among those who did not use SSP and there was variation across race and ethnicity groups. Multiple sexual partnerships were more commonly reported among women using SSP but varied by race and ethnicity (p-value<0.0001). Among White women, those who used SSP reported higher prevalence of new (42%) and sex trade partnerships (29%). White and Hispanic/Latina women who had not used SSP reported a higher prevalence of sex at a sex party compared to their counterparts who used SSP; among Black women, half of those who used SSP reported sex at a sex party compared to 8% among those who had not (p-value<0.0001). Overall, women who used SSP had twice the prevalence of self-reported STI symptoms (55%) compared to those who did not use SSP (20%). Most women lacked effective STI prevention methods regardless of SSP use, with particularly high lack of effective STI prevention reported among Black (100%) and Hispanic/Latina women (91%). Women who used SSP reported a lower prevalence of HPV vaccination (27%) and a higher prevalence of never/non-recent pelvic examination (29%), and this varied significantly across race and ethnicity (p-value<0.0001).

Among men, the overall pattern between SSP use and sexual and reproductive health indicators was less pronounced as that observed among women, but there was substantial variation among the racial and ethnic groups (Fig. 2b). A similar prevalence of multiple, new, and/or casual partnerships was reported by men who did not use SSP as those who did. Men who did not use SSP reported a higher prevalence of sex trade partnerships (21%), with none of the White and Black men who used SSP reporting sex trade, and similar prevalence among Hispanic/Latino men (p-value<0.0001). Sex at a sex party was more frequently reported by men who did not use SSP (11%), and this was driven by the prevalence among Hispanic/Latino men (p-value<0.0001). STI symptoms were reported more frequently by men who used SSP (26%) compared to those who did not (17%). Among White and Hispanic/Latino men, those who used SSP had lower prevalence of lack of effective STI prevention and among Black men, 100% of those who used SSP reported lack of effective STI prevention (p-value=0.06). Never/non-recent prostate examination appeared more prevalent among those who reported SSP use among the racial and ethnic groups.

Among the participants who reported use of SSP in the past year, approximately 40% reported receiving sexual and reproductive health education, 17% reported receiving testing for pregnancy and/or infectious diseases, 22% received referrals to external sexual and reproductive health services, 13% reported health screening

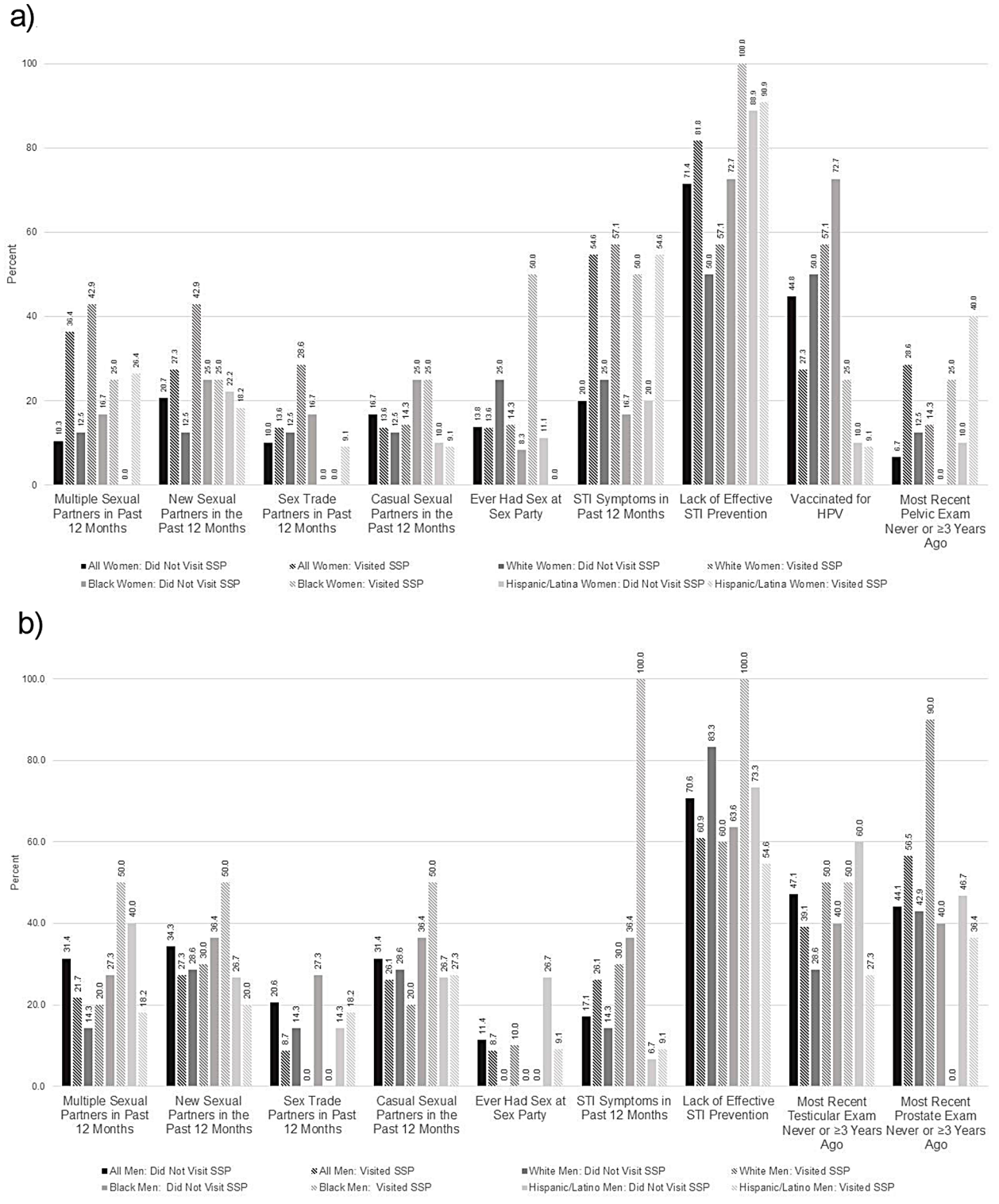

Fig. 2 **a**. Prevalence of Self-Reported STI and Sexual and Reproductive Health Experiences by SSP Use by Race and Ethnicity among Women. **b**. Prevalence of STI and Sexual and Reproductive Health Experiences by SSP Use and Race and Ethnicity among Men

(e.g., cervical cancer screening, prostate cancer screening, postpartum depression), and 49% reported receiving medications or supplies (i.e., condoms, menstrual hygiene products; data not shown). We explored variation by gender, race, and ethnicity, and found that among men, Black men most commonly reported receipt of health screening (50%) compared to 10% of White men and no Hispanic/Latino men, but conversely, no Black men reported receiving medication or supplies compared to 90% of White men and one-third of Hispanic/Latino men.

Discussion

In this sample of people who use unprescribed opioids in New York City, SSP use varied by use of injection drugs and across gender, racial, and ethnic groups, with Black men and women less likely to report SSP use than their White counterparts. Adverse STI and sexual and reproductive health experiences, conditions, and care were more prevalent among women reporting SSP use, with variation among the racial and ethnic groups and non-negligible levels of risk among women who did not use an SSP. SSP are a promising venue to reach people who use drugs in order to address unmet STI and related sexual and reproductive health needs. However, the ability to do so among intersecting gender, racial, and ethnic groups may vary considering the differences we observed in both use of SSP and sexual and reproductive health indicators across these groups. Our findings suggest that to improve the sexual and reproductive health of people who use drugs, additional approaches to identify and reach this diverse population are needed. This may include identifying additional venues where people who use drugs can obtain sexual and reproductive health services such as substance use treatment centers, criminal legal settings, and emergency departments, with particular attention paid to ensuring the gender, racial, and ethnic groups at greatest risk are included [12].

We found that only 20% of Black participants in our sample reported past-year SSP use compared to approximately 50% of White and Hispanic/Latinx participants and this difference remained even when restricting to those reporting IDU. In the 2018 New York City National HIV Behavioral Surveillance, among people who reported past year IDU, 60% were Hispanic/Latino, 25% were Black, and 12% were White. Taken together, our results support those from prior studies that demonstrated that the people accessing SSP often do not reflect the racial and ethnic diversity of the surrounding area [26, 28]. For example, in King County, Washington, while almost 20% of people who inject drugs were Black, only 6% of participants surveyed at SSP were Black [26]. Moreover, about three-quarters of both men and women in our sample reported IDU, which differs from reports from New York City and other regions that IDU is less prevalent among women [32]. However, aligned with extant literature [26], we found that SSP use was reported equally - approximately 40% - among men and women in our sample. While there are some data available regarding the individual categorizations of gender, race, and ethnicity of clientele served by harm reduction programs [26, 33, 34], to our knowledge, our study is among the first to examine SSP use reported by intersecting gender, racial, and ethnic groups, including among those who do and do not inject drugs. Notably, only one-quarter of Black women used SSP, all of whom reported IDU, and 15% of Black men used SSP, none of whom reported IDU. While research suggests that people who inject drugs, and people who use drugs more broadly, in the US are predominantly White males [35, 36], and therefore logically would comprise a large proportion of those accessing SSP, our findings support that there are noteworthy gender, racial, and ethnic inequities in SSP use that must be addressed to better reach marginalized individuals within an already marginalized and under-served group.

There is a robust literature demonstrating people served by SSP have elevated risk of blood-borne infectious diseases and a primary goal of SSP is infectious disease prevention [37–39]. Our study expands on this by focusing on STI and related sexual and reproductive health experiences, conditions, and care, which are often not an explicit focus of SSP [18, 21, 40], especially in the context of the ongoing historic overdose crisis in the US. We found that adverse sexual and reproductive health indicators were more commonly reported by those who used SSP among both men and women. This may in part be due to people who inject drugs being more likely to access SSP and having higher risk profiles and frequent co-occurring adverse social conditions [37] compared to those who use drugs without injecting. The high risk and unmet need among SSP clients highlights the vast promise of continued work to integrate and expand sexual and reproductive health services offered at these sites [22, 23, 41–43], which our results suggest could benefit men and women. However, we found that among the approximately half of participants who reported use of SSP in the past year, receipt of sexual and reproductive health-focused services there was relatively rare, which the most commonly reported service being provision of condoms. A recent survey of national SSP reported that essentially all provided clients with condoms and HIV/HCV education, but STI-specific testing and treatment was reported by less than half [21]. In New York City SSP, all offered safer sex education and supplies and over half of clients received health education, 10% received HCV testing, and 12% received referrals to other services [20]. Research is needed to understand optimal implementation of co-located sexual and reproductive health services

in other locales, such as areas where SSP have been recently implemented and/or drug use is especially stigmatized and criminalized, as well as research on the scalability of incorporating and maintaining these services within SSP alongside additional pressing priorities of preventing overdose and blood-borne infections.

However, although implementing sexual and reproductive health-focused services within SSP will extend reach to groups of people who use drugs that have the greatest risk, missed opportunities may remain among specific groups. Ours is the only known study that has compared sexual and reproductive health indicators by SSP use among people who use drugs irrespective of route of drug administration. As described above, those accessing SSP largely had the highest levels of risk, yet those who did not use SSP nonetheless reported risk and unmet need. Importantly, when further disaggregated by gender, race, and ethnicity, our findings revealed that sexual and reproductive health inequities could be exacerbated if we do not consider expanding the scope of services to venues beyond SSP to reach the broader population of people who use drugs. To be clear, SSP are a critical space to serve people who use drugs with a vital collection of health services [44] but we must continue to explore where and how to best reach members of this population who do not use and/or have access to SSP. Barriers to SSP use may be geographic and/or related to regulations. For example, SSP in some states require registration, enrollment, and/or carrying program participation identification, and will only replace syringes that are traceable to the specific program [45]. These policies may not only serve to make SSP inaccessible for people who use drugs without injecting but may also deter some people who inject [46]. In addition to reducing barriers to SSP access, we need to reach people who use drugs with sexual and reproductive health services through other venues where they may be found, such as detoxification and drug treatment, jails and prisons, and healthcare settings like urgent care or emergency departments [12]. Overdose prevention centers could serve as a venue to explore in the future as they expand beyond New York City, one of the few US cities where they are somewhat sanctioned, although like SSP, these sites may have limited scope within the broad population of people who use drugs. Mobile health clinics and telehealth services operated by drug treatment and harm reduction services are additional potential places that are acceptable among people who use drugs that could increase access to sexual and reproductive health services [47, 48], although these approaches also have barriers that may limit reach [49–51]. Most importantly, because people who use drugs experience barriers and stigma in healthcare and drug-related service settings, we must find ways to improve sexual and reproductive health services and outcomes through research that is conducted in partnership with people who use drugs to ensure that their needs are truly met using acceptable approaches.

There are important limitations to note. Our sample size is modest, and the findings may not be generalizable. The parent study recruited via respondent-driven sampling among people who use unprescribed opioids in New York City and are therefore likely not representative. Moreover, compared to the parent study sample, participants in this nested cross-sectional study were more likely to be female, White, and in their mid-40s on average, although SSP use, other sociodemographic characteristics (i.e., homelessness, employment), and substance use history did not appear to differ. Measures are self-reported past-year indicators that may be subject to social desirability bias or other measurement error. Participants in the sample were all cisgender, and gender diverse people who use drugs likely have additional important considerations regarding the ways in which their intersecting identities may compound barriers to SSP as well as inequities in sexual and reproductive health care and experiences [52].

In conclusion, alongside increasing access to SSP and expanding the STI and sexual and reproductive health services offered there, we must continue to identify approaches to meet the needs of the broad and diverse population of people who use drugs in order to improve sexual and reproductive health and decrease inequities.

Abbreviations

AUD	Alcohol Use Disorder
HCV	Hepatitis C Virus
HPV	Human Papillomavirus
IDU	Injection Drug Use
OUD	Opioid Use Disorder
STI	Sexually Transmitted Infection
SSP	Syringe Services Program
US	United States

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Author contributions

J.D.S, A.S.B., and L.C.E conceptualized and designed the study. J.D.S., A.S.B, L.C.E., and M.M. collected the data. J.D.S analyzed the data, wrote the main manuscript text, and created the figures. All authors contributed to the writing and revision of the manuscript, and all authors reviewed the manuscript.

Data availability

To protect participant confidentiality, data are not publicly available.

Declarations

Competing interests

The authors declare no competing interests.

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