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Characteristics of drug-involved black women under community supervision; implications for retention in HIV clinical trials and healthcare

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ABSTRACT

This study examined retention and its relationship to mental health, substance use, and social determinants of health in a randomized clinical trial of a behavioral HIV/sexually transmitted infection prevention intervention with drug-involved Black women ($N = 348$) under community supervision programs in New York City. Using secondary analysis, we used logistic models to test the association between factors related to mental health, substance use, and social determinants of health and follow-up assessment completion (three, six, and 12 months). Participants who were diagnosed with schizophrenia had lower odds of retention. Participants who misused prescription opiates during their lifetime or reported food insecurity in the past 90 days had higher odds of retention throughout the intervention.

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Introduction

Retention in clinical studies is of paramount importance for social work practice, policy, and healthcare (add) but evidence to suggest that patients from marginalized communities may be more likely to drop out of studies compared to their non-marginalized counterparts (Bass et al., 2020)). Various factors contribute to this disparity, including social determinants of health, systemic barriers, mistrust of research institutions, and access to resources. (Goddard-Eckrich et al., 2023). Thus, recruiting, engaging, and retaining vulnerable populations in research is a long-standing challenge for researchers, especially in clinical trials (Goddard-Eckrich et al., 2022; Wippold et al., 2021). Existing

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evidence-based interventions (EBIs) have persistent racial disparities in their study populations, which suggests that EBI findings may be non-generalizable (Hailemariam et al., 2019). Furthermore, although racial minorities make up about 25% of the U.S. population, they comprise only 15% of participants in HIV clinical trials sponsored by the National Institutes of Health (NIH) (Fisher & Kalbaugh, 2011; United States Census Bureau QuickFacts, 2022.). While recruiting Black Americans to enroll in research is vital for improving health and representational inequities, retaining them is equally essential. For social workers in healthcare, factors that impact research retention may also illuminate opportunities to innovate social work practice and improve adherence to life-sustaining protocols and treatment (Avery et al., 2017).

Social work in health care and retention

Social work practice in particular, emphasizes the promotion of equity and social justice, and ensuring the retention of participants from various backgrounds helps address health disparities and ensures that interventions and treatments are effective for everyone (Cohen & De Marchis, 2021). Additionally, social workers can use lesson learned from clinical trials to implement evidence-based practices (EBP's), that can lead to better treatment outcomes for their clients in healthcare settings (add). Retaining patients in clinical studies and better understanding those who have high attrition, can help social workers and healthcare providers to gain a deeper understanding of their clients' needs, preferences, and experiences (Melender, 2017). This patient-centered approach helps in tailoring interventions and healthcare services to address the specific challenges and barriers faced by individuals from diverse backgrounds and assists in continuity of care, which is crucial to promoting positive health outcomes (Trowbridge & Mische Lawson, 2016). That ensures patients receive consistent support, guidance, and follow-up care that helps to build trust which is fundamental to maintaining a positive and collaborative relationship between social workers and their clients in healthcare settings (Trowbridge & Mische Lawson, 2016).

To effectively retain Black Americans in research, we should understand the social, personal, and systemic factors influencing the retention of minority groups in interventional programs to develop unique and effective ways to mitigate risk and improve health outcomes. The pervasive and systemic prevalence of anti-Black racism and white supremacy in the United States has been linked to disparities in and higher rates of incarceration, opioid-related deaths, substance use disorder (SUD), HIV and sexually transmitted infections (STIs), homelessness, and food insecurity for Black individuals (Hinton & Cook, 2021; James & Jordan, 2018; Johnson et al., 2018; Trusts, 2018; Yousefi-Rizi et al., 2021).

Disparities in HIV and social work in healthcare

It is estimated that 45% of community supervision program (CSP) (e.g., probation, parole, and alternative-to-incarceration (ATI) programs) participants have a substance use disorder (SUD), a well-known risk factor for HIV/sexually transmitted infections (STIs) (Spaulding et al., 2009). In fact, one in six people living with HIV in the United States is incarcerated annually (Bass et al., 2020). HIV has disproportionately affected minorities and new prevention and treatment modalities are urgently needed to increase the enrollment and retention of minorities in HIV prevention clinical trials (Garza et al., 2017). This highlights the importance of addressing the disproportionate impact of HIV on minorities and the urgent need for new prevention and treatment approaches in HIV prevention clinical trials, which is crucial for social work practice in health care settings, which is instrumental in addressing racial and ethnic factors, including those related to HIV prevention and promoting equitable access for all populations (Andrasik et al., 2021; Marhefka et al., 2020).

Social and structural challenges to retaining and engaging minorities

Structural drivers, such as racism and sexism, have created historically and currently inequitable systems and policies observed across different social strata and are the root cause of social determinants of health (SDOH) (Yearby, 2020). Factors such as housing, transportation, and food operate as critical intermediaries on multiple levels to influence health and are most often the driving factor behind health disparities observed epidemiologically across different racial and ethnic groups (Unger et al., 2016). Due to structural racism, SDOHs are structured to advantage white populations and disadvantage other racial and ethnic minority groups in the United States, including Black and Latino groups. One of the most important systems affected by structural racism is the legal system, rendering criminal legal involvement an important SDOH that exacerbates the effects of other SDOH (e.g., reduces chances of stable housing or employment) and directly affects health and well-being (Rotter & Compton, 2022).

Frameworks such as the social-ecological model (SEM) can guide our understanding of how factors at multiple levels (e.g., individual, interpersonal, organizational, community, and policy) exert direct, indirect, and modifying effects on health behaviors and outcomes (Golden & Earp, 2012). Individuals are embedded within these larger sociopolitical systems and operate in an interactive way with these contextual environments that underlie their health outcomes. Additionally, the effects of individual factors and the interactions between these social determinants, especially food insecurity, incarceration, and homelessness, all play a role in retention in healthcare access. It has been shown that housing security is more elusive for formerly incarcerated

individuals and that homelessness is a predictor for recidivism, higher rates of SUD, mental illness, and physical and/or sexual violence victimization, all of which act to inhibit engagement in HIV services (Augustine & Kushel, 2022). Likewise, food insecurity may increase women's risk for IPV (Baratosy & Wendt, 2017). Lastly, negative or abusive interactions with law enforcement and CSPs often prevent women from seeking emergency care for an overdose (Gilbert et al., 2015; Latimore & Bergstein, 2017), and lower their access to health and social services, including IPV services, drug treatment, and harm reduction services (Baratosy & Wendt, 2017; Platt et al., 2018). Awareness of and responsiveness to these factors may improve accessibility and increase engagement for vulnerable populations, where healthcare and social workers can provide connections to appropriate services and healthcare interventions (Conti et al., 2023).

Substance abuse, opioid addiction challenges to retaining and engaging minorities

Social factors can have a negative impact on drug users' health and overlap with the potential barriers to their participation in interventions and research studies (Goddard-Eckrich et al., 2022). Considerable barriers to healthcare exist for those with HIV and opioid misuse, including stigma, discriminatory policies, and identifying major drivers of drug overdose among Black women who use drugs (Gilbert et al., 2021; Hodder et al., 2021). Further understanding of these important issues can have implications to help retain other minority and marginalized populations.

Research gaps and focus of this study

Black women under CSPs are the largest growing segment of the criminal legal system (Grella et al., 2020) in the United States due to continued racialized drug laws and policing practices (Alexander, 2012; Bailey et al., 2017). Thus, understanding how the various negative health outcomes associated with criminal legal involvement becomes vital. An important way to achieve this is through the inclusion and retention of such individuals in research trials.

To address this gap in retention literature, our study examined the relationship between mental health, substance use, and SDOH that impact survey participation over time in an HIV/STI prevention intervention (Project E-WORTH: Empowering African-American Women on the Road to Health) among 348 substance-involved women under community supervision in New York City (NYC) (Gilbert et al., 2021; Platt et al., 2018). This study tested several hypotheses related to the impact of mental health diagnosis, lifetime substance use, and social determinants of health on being retained for all follow-up assessments after

adjusting for potentially confounding sociodemographics (e.g., age, education, employment status, religion, type of criminal justice involvement). We hypothesized that lifetime experiences of prescription opioid use (H1), severe mental illness (H2), and experiences with social determinants (e.g., homelessness and food security) in the past 90 days are associated with lower retention rates (H3).

Methods

Study design and population

This study utilized data from a National Institute on Drug Abuse (NIDA)-funded randomized clinical trial evaluating the effectiveness of a culturally-tailored HIV/STI prevention intervention (E-WORTH) for substance-involved Black women conducted among CSP locations in New York City (Gilbert et al., 2021). The intervention linked women to services and screened for SDOH. We used data from baseline and three-, six-, and 12-month follow-up surveys. Data were collected from November 2015 to June 2018, and participants were recruited onsite at CSP sites following mandated education sessions related to their criminal legal status by research assistants, community supervision staff, and word-of-mouth referrals from other participants (Gilbert et al., 2021). Documentation of being mandated to a CSP in the past 90 days was required of all participants who were not referred by word of mouth or not recruited from CSP sites. A screening survey assessed whether a respondent met the following criteria: (1) woman-identified, (2) 18 years old or older, (3) identified as African American or Black, (4) had been charged with a misdemeanor or felony and were supervised by probation, parole, or an ATI program in the past 90 days, (5) reported any illicit substance use or were in substance treatment in the past 90 days, (6) reported having had condomless sex in the past 90 days, and (7) reported another type of HIV risk in the past year (e.g., engaged in sex with multiple partners, shared syringes, tested positive for an STI, or were HIV positive). Of the 908 screened women, 352 met the eligibility criteria. This study also excluded four participants owing to missing demographic data for a final sample size of 348. Participants received \$295, inclusive of transportation stipends, as well as food for completion of the screening, intervention, and each follow-up assessment (Gilbert et al., 2021). The Institutional Review Board (IRB) of Columbia University approved the study protocol. Further description and details of the E-WORTH intervention are described in a previous publication (Gilbert et al., 2021).

Retention

Retention is the main outcome measure and was operationalized as whether participants responded to the surveys at all time points: baseline, three months, six months, and 12 months.

Sociodemographics

Participants were asked about their age, education, employment status, and religion. Age was measured as a continuous variable ranging from 22 years to 73 years of age. Education was measured as a categorical variable that includes less than high school, high school, some college, and technical/four-year college or more. Employment status was indicated by a categorical variable that included working part-time or full-time, unemployed, and other. Religion was measured as a categorical variable that included Orthodox Christian, Catholic, Protestant, non-religious, and other. Orthodox Christian and Catholic groups were combined, and “Other” religious groups combined non-majority religions in the United States, such as Islam, Judaism, Buddhism, Hinduism, and other religions. Participants were also asked about their involvement with the criminal legal system, in the past three months.

Substance use and mental health status

Drug use was measured using NIDA’s Seek, Test, Treat and Retain for Vulnerable Populations Data Harmonization Measure (Chandler et al., 2015; Johnson et al., 2018) and injection risk behavior items are taken from the STTR Criminal Justice instrument (Johnson et al., 2018). Participants were asked about their lifetime use of various substances. In the analysis, we considered self-reported lifetime use of alcohol, marijuana, crack, cocaine, and prescription opiates. Alcohol binge drinking was defined as drinking four or more drinks of alcohol in a six-hour period. Vicodin, Oxycontin, and Percocet were included as examples of prescription opiates. The survey did not distinguish between off-prescription and approved drug use. Participants were also asked about their lifetime mental health status. Specifically, they were asked whether they had ever been told by a doctor that they had depression, bipolar disorder (i.e., periods of depression and manic behavior), anxiety, or schizophrenia.

Social determinants of health characteristics

Participants were asked about adverse childhood experiences (ACEs), food security, and homelessness variables. While these variables do not comprehensively measure social determinants of health, they are important individual determinants in the context of our study sample: initial univariate analysis

indicated high ACEs scores and high rates of food insecurity and homelessness. For example: we measured their housing status (homeless in the last 90 days vs. stably housed), food insecurity (reported food insecurity in the past 90 days vs. not), prior mental health hospitalizations (yes/no), exposure to childhood sexual trauma (exposed vs. not exposed), history of sex trading (those who ever exchanged sex for money, drugs, or goods vs. those who had not), frequent police encounters (arrested 3 or more times in the last 90 days), substance use (recent drug use, lifetime opioid, cocaine, and intravenous drug use), lifetime conviction history, and following currently employed (currently unemployed vs. other), about (Stringer et al., 2020).

More specifically, cumulative ACEs were calculated and ranged from zero to ten. For food security, participants were asked, “In the past three months, have you always had enough money to buy food?” This was reverse coded in analysis, and an affirmative answer indicated that the participant had not been food secure in the past three months. To measure homelessness, participants were asked, “In the past 90 days, were there times you had no regular place to live (for example, slept or lived in a park, street, subways, abandoned building)?” An affirmative answer indicated that the participant had experienced homelessness in the past 90 days. Collectively, these factors represent participants’ social determinants of health (Stringer et al., 2020).

Statistical analysis

Researchers performed analysis using R version 4.1.3. First, the demographics, mental health status, substance use, criminal legal system involvement, and social determinants of health characteristics assessed at baseline were examined. Comparisons were made using the chi-squared test and t-tests. After examining bivariate associations, all covariates were entered into a multivariable binary logistic regression controlling for the intervention arm and sociodemographic variables, such as age, education, employment, religion, and type of criminal legal justice involvement. Several multivariable binary logistic regression models were used to examine the relationships between the independent variables (depression, anxiety, bipolar, schizophrenia, lifetime binge-drinking, lifetime marijuana use, life-time prescription opiate use, cumulative ACEs, homelessness, and food insecurity) and outcome variable retention. Four participants were excluded from the analysis due to incomplete demographic information. The level of statistical significance was set at a p-value less than 0.05 for all inferential statistics.

Table 1. Sample characteristics of participants.

	Univariable	Bivariable Comparisons	
	Full Sample (<i>n</i> = 348) Frequency (valid %) or Mean (SD)	Retained (<i>n</i> = 254) Weighted % (95% CI)	Non-Adherent (<i>n</i> = 94) Weighted % (95% CI)
<i>Arm</i>			
TAU/Control	178 (51.2%)	74.2 (67.7, 80.7)	25.8 (19.3, 32.3)
E-WORTH/Treatment	170 (48.9%)	71.8 (64.9, 78.6)	28.2 (21.4, 35.1)
<i>Age</i> ^a	37.3 (10.9)	33.2 (11.30)*	30.4 (10.1)
<i>Education</i>			
Less than high school	155 (44.5%)	72.9 (65.8, 80.0)	27.1 (20.0, 34.2)
High school/some college	174 (50.0%)	74.1 (67.6, 80.7)	25.9 (19.3, 32.4)
College (4-year/technical)	19 (5.5%)	63.2 (39.3, 87.0)	36.8 (13.0, 60.7)
<i>Employment</i>			
Part/Full-time	103 (29.6%)	70.9 (62.0, 79.8)	29.1 (20.2, 38.0)
Unemployed	137 (39.4%)	72.3 (64.7, 79.9)	27.7 (20.1, 35.3)
Other	108 (31.0%)	75.9 (67.7, 84.1)	24.1 (15.9, 32.3)
<i>Religion</i>			
Catholic/Christian	109 (31.3%)	78.0 (70.1, 85.9)	22.0 (14.1, 29.9)
Protestant	88 (25.3%)	73.9 (64.5, 83.2)	26.1 (16.8, 35.5)
Not Religious	119 (34.2%)	71.4 (63.2, 79.7)	28.6 (20.4, 36.8)
Other	32 (9.2%)	59.4 (41.4, 77.4)	40.6 (22.6, 58.6)
<i>Criminal Justice (past 3 months)</i>			
Jail (Yes)	78 (22.4%)	71.8 (61.6, 82.0)	28.2 (18.0, 38.4)
Parole (Yes)	59 (17.0%)	67.8 (55.5, 80.1)	32.2 (19.9, 44.5)
Probation (Yes)	248 (71.3%)	73.8 (68.3, 79.3)	26.2 (20.7, 31.7)
<i>Mental Health Status</i>			
Depression (Yes)	206 (59.2%)	74.8 (68.8, 80.7)	25.2 (19.3, 31.2)
Anxiety (Yes)	152 (43.7%)	75.7 (68.8, 82.6)	24.3 (17.4, 31.2)
Bipolar (Yes)	122 (35.1%)	73.8 (66.0, 81.7)	26.2 (18.3, 34.1)
Schizophrenia (Yes)	19 (5.5%)	52.6 (27.9, 77.4)*	47.4 (22.6, 72.1)
<i>Lifetime Drug Use</i>			
Binge-Drinking (Yes)	244 (70.1%)	75.0 (69.5, 80.5)	25.0 (19.5, 30.5)
Marijuana (Yes)	255 (73.3%)	73.3 (67.9, 78.8)	26.7 (21.2, 32.1)
Prescription Opiates (Yes)	53 (15.2%)	86.8 (77.4, 96.2)*	13.2 (3.8, 22.6)
<i>Social Determinants</i>			
Cumulative ACES ^a	3.7 (2.9)	3.7 (2.9)	3.5 (2.9)
Homeless (Yes)	68 (19.5%)	66.2 (54.6, 77.7)	33.8 (22.3, 45.4)
Food Insecure (Yes)	219 (62.9%)	79.0 (73.6, 84.4)**	21.0 (15.6, 26.4)

Note: **Boldface** indicates statistical significance (**p* < .05; ***p* < .01). CI = confidence interval.

^aThe mean and standard deviation are reported. Two-sample t-tests with unequal variances were used to calculate statistical significance.

Results

Background characteristics

All participants identified as Black or African American. Univariable estimates indicated that the average age of participation in the study was 37.3 years, with a standard deviation of 10.9 years (see Table 1). Of the participants, 44.5% (*n* = 155) attained less than a high school education, whereas 50.0% (*n* = 174) attended high school or some college. Additionally, 39.4% (*n* = 137) of the participants were unemployed, and 29.6% (*n* = 103) were either employed part-time or full-time. Most participants, 31.3% (*n* = 109), identified their religion as either Orthodox Christian, Catholic, or Protestant (25.3%, *n* = 88), and a large portion (34.2%, *n* = 119), had no

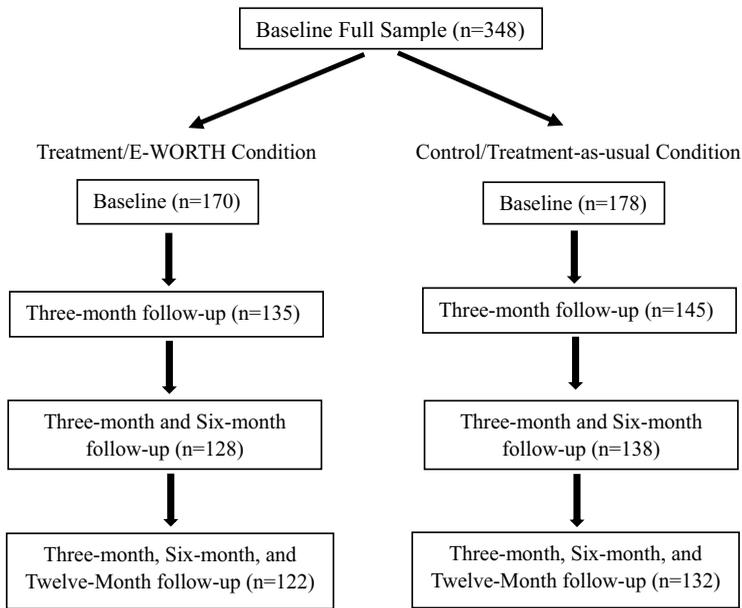


Figure 1. Retention in study sample by condition.

religious affiliation. Of note, 62.9% ($n = 219$) of the participants reported that they did not have enough food in the past three months, while 19.5% ($n = 68$) reported being homeless. Almost one-quarter of participants, 22.4% ($n = 78$), reported being incarcerated in the past 90 days. A total of 71.3% ($n = 248$) were on probation, and 17.0% ($n = 59$) were on parole. The majority of participants reported lifetime use of marijuana (73.3%, $n = 255$), and binge drinking (70.1%, $n = 244$), whereas 15.2% ($n = 53$) reported using prescription opiates. Over half of the participants, 59.2% ($n = 206$), reported that their doctors had told them that they had depression, and 43.7% ($n = 152$) reported that their doctors had told them that they had anxiety. Approximately 35.1% ($n = 122$) of the participants reported that a doctor told them they had bipolar disorder, and 5.5% ($n = 19$) reported a schizophrenia diagnosis.

Retention, characteristics, and social determinants

Retention status was measured via the completion of all follow-up assessments throughout the study. See [Figure 1](#). Nearly three-quarters, 72.8% ($n = 254$), of the participants were retained throughout the entirety of the study and completed all follow-up assessments. The treatment condition, E-WORTH ($n = 170$) had response rates of 79.4% ($n = 135$) at the three-month follow-up, 75.3% ($n = 128$) at both three-month and six-month follow-ups, and 71.8% ($n = 122$) at three-month,

Table 2. Multivariable models for mental health status, lifetime drug use, and social determinants.

	Multivariable Model	
	aOR	(95% CI)
<i>Mental Health Status</i>		
Depression (Yes)	1.19	(0.71, 2.00)
Anxiety (Yes)	1.09	(0.64, 1.84)
Bipolar (Yes)	1.04	(0.60, 1.77)
Schizophrenia (Yes)	0.28	(0.10, 0.76)*
<i>Lifetime Drug Use</i>		
Binge-Drinking (Yes)	1.42	(0.84, 2.42)
Marijuana (Yes)	1.24	(0.79, 1.26)
Prescription Opiates (Yes)	2.99	(1.25, 7.17)*
<i>Social Determinants</i>		
Cumulative ACES	1.02	(0.94, 1.12)
Homeless (Yes)	0.69	(0.38, 1.25)
Food Insecure (Yes)	2.45	(1.47, 4.09)***

Note: Ten multivariable models were analyzed for each predictor separately, adjusting for sample characteristics presented in Table 1. Retention was the outcome variable (73.0%). CI = confidence interval; aOR = adjusted odds ratio (controlling for all covariates presented in the table). * $p < .05$, ** $p < .01$, *** $p < .001$.

six-month, and 12-month follow-ups. The control condition, treatment-as-usual (TUA) ($n = 178$) had response rates of 81.5% ($n = 145$) at the three-month follow-up, 77.5% ($n = 138$) at both three-month and six-month follow-ups, and 74.2% ($n = 132$) at three-month, six-month, and 12-month follow-ups.

Bivariate comparisons (see Table 1) revealed significant differences in prescription opioid use and food security between retained and non-adherent participants ($p < .05$). The majority, 86.8% ($n = 54$), of the participants who reported using prescription opioids in their lives were retained throughout the study. There were significant differences in retention between participants who reported and did not report that they had enough food in the past three months.

The results of the binary logistic regression model (see Table 2) indicated that mental health status, substance use, and social determinants were significantly associated with retention. Participants who had been diagnosed with schizophrenia had significantly lower odds (aOR = 0.28, $p < .05$) of retention than those who had not been told by their doctor that they had schizophrenia. Lifetime use of prescription opiates was correlated with retention rates, as participants who used prescription opiates had significantly higher odds (aOR = 2.99, $p < .05$) of completing the follow-up assessments than those who did not. For social determinants, participants who reported that they did not always have food in the past 90 days had significantly higher odds (aOR = 2.45, $p < .001$) of completing the follow-up assessments compared to those who reported always having enough food in the past 90 days.

Discussion

To our knowledge, this study is the first to present findings that test a number of hypotheses on the retention of Black women in a longitudinal HIV clinical trial with an observation period among substance-involved Black women under community supervision. Overall, approximately 73.0% of the participants were retained throughout the study which might indicate the motivation for engagement in an HIV prevention intervention (Gilbert et al., 2021). Additionally, since no significant differences in retention rates were found between the intervention and control arms of the study, this may indicate the success of retaining participants in a randomized clinical trial, the E-WORTH intervention, the intervention arm's study protocol implementation, and the incentives and methods used.

Relationship and methods of recruitment

We found that participants with schizophrenia were approximately 72% lower odds to be retained throughout the study. Although the existing literature on schizophrenia and attrition rates is limited, randomized controlled trials have found that participants with schizophrenia have especially high attrition rates in placebo-controlled trials (Farris et al., 2020; Kemmler et al., 2005; Stroup, 2006). Additionally, the high attrition rates among participants with schizophrenia throughout this study indicate a need to better support these participants throughout the trial. This is especially critical, as we must acknowledge racial disparities in schizophrenia diagnoses. Historically, the diagnosis rate of schizophrenia in the Black community is higher than for white counterparts (Olbert et al., 2017).

Differences in attrition rates were also observed when considering lifetime prescription opioid use. Participants who reported lifetime prescription opiate use had 2.99 times the odds to be retained than those who did not. The existing literature on retention rates of persons with prescription opioid drug use is limited and focuses on retention in medically assisted treatment, with wide variability in retention rates (Klimas et al., 2021; Timko et al., 2016). A possible explanation for higher retention rates among prescription opiate users is that individuals who received opioid prescriptions may generally have better access to medical providers as most opioid prescriptions are written by specialists in pain medicine, surgery, and physical medicine or rehabilitation (Levy et al., 2015). Better medical access may indicate a higher likelihood of retention. Therefore, it may be crucial to consider racial and social barriers to accessing healthcare, especially for the population in this study.

This study considers these factors and other psychosocial stressors, as we can then better understand how to increase the retention in and efficacy of research and interventions by considering factors in one's environment and lived experiences that impact decisions and capacity to participate in

intervention studies. Specifically, we examined the relationship between the retention rates of substance-involved participants and the social determinants of health. The variables used in this study to represent the social determinants of health included involvement in the criminal justice system, adverse childhood experiences, food security, and homelessness.

Our findings suggest that social determinants affect retention rates. This study showed that participants who reported being food-secure in the past three months were significantly less likely to be retained than those who reported food insecure in the past three months. While this was initially surprising, Project E-WORTH provided food incentives for intervention participation, which explains why participants experiencing food insecurity may have incentivized participation in the intervention.

Continuing to gain a better understanding of retention factors in research studies is important and may inform retention in vital health care services as well. By considering the intersections of retention, attrition, and the needs and characteristics of specific populations, social workers in health care may discern practice innovations and improve retention in medical care and treatment. This is particularly important with vulnerable populations whose adherence to treatment protocols may impact activities of daily living and lifespan. When adherence to medical treatment can mean actual life or death, it is imperative that social work research assesses how and why SDOH impact participation in and retention in research.

Limitations

This study has several limitations, which provide guidance for future research. This study used self-reports that are likely to have resulted in underreporting due to social desirability, while the use of computer-assisted structured survey (CASI) technology may have increased reporting of sensitive behaviors (Sun et al., 2020; Wolff & Shi, 2012). Next, a key concern is whether the results are internally and externally valid for all Black women who use drugs and are involved in CSP's as the study used nonrandom sampling from various CSP locations in NYC, limiting the generalizability of the results. Our definition of retention – completing surveys at baseline, three months, six months, and 12 months – is strict compared to previous examinations of retention for comparable studies. For comparison, an earlier E-WORTH study had retention rates of 87% for participants who completed both the baseline and three-month assessment, 91% for the baseline and six-month assessment, and 91% for the baseline and 12-month assessment (El-Bassel et al., 2014).

We examined lifetime opiate use; thus, the lack of information about the intensity of prescription opioid use and the age of onset of opioid use, not measured here, could have impacted retention rates (Soyka et al., 2008). As

previously stated, the survey did not distinguish between off-prescription and approved drug use. Lastly, the study was also cross-sectional, making it difficult to discern the temporal ordering between sociodemographic characteristics and social determinants of health. Despite these limitations, this study has addressed gaps in the existing research on the characteristics of Black legal system-involved women who use substances, including their mental health, food insecurity, and substance use. Future studies are needed with larger representative samples of Black women, including both qualitative and quantitative methodologies, to better measure the sociodemographic characteristics and experiences of participants, including longitudinal retention and the role of sociodemographic characteristics and social determinants, including experiences with racism and sexism, in engagement.

Conclusion

In summary, improving retention rates in clinical trials can significantly benefit social work practice innovation by enhancing the understanding of specific populations' unique needs and challenges. These results shed light on the significant factors influencing related to mental health, substance use, and social determinants that can impact retention and engagement. These findings hold particular significance for the field of social work, especially in the realm of health social work. Understanding and addressing these factors are crucial in enhancing the effectiveness of clinical trials and interventions, with the recent example of the low engagement slow uptake of the COVID-19 vaccine among Black Americans (Ferdinand, 2021). Health social work plays a pivotal role in successful recruitment strategies should include developing trust, building relationships, and realizing the benefits of interventions among participants (Choi et al., 2016; Sankaré et al., 2015). As professionals in the social work are vital to recognize the intersectionality of various social determinants that affect individuals' health outcomes. Furthermore, the study findings further highlight the importance of better understanding the drivers of retention and social determinants. Social workers need to embrace a comprehensive approach by incorporating measures that address substance use, mental health, food insecurity, and other related issues. By doing so, researchers can gain valuable insights into the predictors of study retention and ultimately contribute to more effective interventions and services in healthcare and social work settings.

Lastly, by recognizing the broader factors affecting engagement, particularly in supporting Black women and marginalized communities, social workers can develop targeted interventions and services that bridge the gap between medical and social aspects of care, leading to improved health outcomes and a more holistic approach to healthcare delivery. Social workers

can play a critical role in connecting these populations with the necessary services and resources, creating an environment where individuals feel understood and supported. Moreover, integrating routine screening for social determinants in CSP settings, as exemplified by E-WORTH, into the framework of clinical social work and healthcare settings, may also reduce the risk of recidivism (Nydegger et al., 2020). Ultimately, having a profound impact on increasing rates of retention in real word settings.

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References

Alexander, M. (2012). *The New Jim Crow*. The New Press.

- Andrasik, M. P., Broder, G. B., Wallace, S. E., Chaturvedi, R., Michael, N. L., Bock, S., Beyrer, C., Oseso, L., Aina, J., Lucas, J., Wilson, D. R., Kublin, J. G. & Mensah, G. A. (2021). Increasing black, indigenous and people of color participation in clinical trials through community engagement and recruitment goal establishment. *PLoS ONE*, *16*(10), e0258858 <https://doi.org/10.1371/journal.pone.0258858>
- Augustine, D., & Kushel, M. (2022). Community supervision, housing insecurity, and homelessness. *The ANNALS of the American Academy of Political and Social Science*, *701* (1), 152–171. <https://doi.org/10.1177/00027162221113983>
- Avery, M., Mills, S. J., & Stephan, E. (2017, September). Real-time monitoring through the use of technology to enhance performances throughout HIV cascades. *Current Opinion in HIV and AIDS*, *12*(5), 488–493. PMID: 28650346 <https://doi.org/10.1097/COH.0000000000000397>
- Bailey, Z., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *The Lancet*, *389* (10077), 1453–1463. [https://doi.org/10.1016/s0140-6736\(17\)30569-x](https://doi.org/10.1016/s0140-6736(17)30569-x)
- Baratosy, R., & Wendt, S. (2017). “Outdated laws, outspoken whores”: Exploring sex work in a criminalised setting. *Women’s Studies International Forum*, *62*, 34–42. <https://doi.org/10.1016/j.wsif.2017.03.002>
- Bass, S. B., D’Avanzo, P. A., Alhajji, M., Ventriglia, N., Trainor, A., Maurer, L., Eisenberg, R., & Martinez, O. (2020). Exploring the engagement of racial and ethnic minorities in HIV treatment and vaccine clinical trials: A scoping review of literature and implications for future research. *Aids Patient Care and Stds*, *34*(9), 399–416. <https://doi.org/10.1089/apc.2020.0008>
- Chandler, R. K., Kahana, S. Y., Fletcher, B., Jones, D., Finger, M. S., Aklin, W. M., Hamill, K., & Webb, C. (2015, December). Data collection and harmonization in HIV research: The seek, test, treat, and retain initiative at the National Institute on drug Abuse. *American Journal of Public Health*, *105*(12), 2416–2422. Epub 2015 Oct 15. PMID: 26469642; PMCID: PMC4638253 <https://doi.org/10.2105/AJPH.2015.302788>
- Choi, J., Lee, J., Vittinghoff, E., & Fukuoka, Y. (2016). mHealth physical activity intervention: A randomized pilot study in physically inactive pregnant women. *Maternal and Child Health Journal*, *20*(5), 1091–1101. <https://doi.org/10.1007/s10995-015-1895-7>
- Cohen, A. J., & De Marchis, E. H. (2021). Building an evidence base for Integration of social care into health care: Our collective path ahead. *Annals of Family Medicine*, *19*(4), 290–292. PMID: 34264837; PMCID: PMC8282296: <https://doi.org/10.1370/afm.2720>
- Conti, J., Dryden, E., Fincke, B. G., Dunlap, S., & McInnes, D. K. (2023). January. Innovative approaches to engaging homeless and marginally housed patients in care: A case study of hepatitis C. *Journal of General Internal Medicine*, *38*(1), 156–164. Epub 2022 Jul 25. PMID: 35879538; PMCID: PMC9849487: <https://doi.org/10.1007/s11606-022-07708-w>
- El-Bassel, N., Gilbert, L., Goddard-Eckrich, D., Chang, M., Wu, E., Hunt, T., Epperson, M. W., Shaw, S. A., Rowe, J. C., Almonte, M., Witte, S. S., & Stoove, M. (2014). Efficacy of a group-based multimedia HIV prevention intervention for drug-involved women under community supervision: Project WORTH. *PLOS ONE*, *9*(11), e111528. <https://doi.org/10.1371/journal.pone.0111528>
- Farris, M. S., Devoe, D. J., & Addington, J. (2020). Attrition rates in trials for adolescents and young adults at clinical high-risk for psychosis: A systematic review and meta-analysis. *Early Intervention in Psychiatry*, *14*(5), 515–527. <https://doi.org/10.1111/eip.12864>
- Ferdinand, K. C. (2021). Overcoming barriers to COVID-19 vaccination in African Americans: The need for cultural humility. *American Journal of Public Health*, *111*(4), 586–588. <https://doi.org/10.2105/ajph.2020.306135>

- Fisher, J. A., & Kalbaugh, C. A. (2011). Challenging assumptions about minority participation in US clinical research. *American Journal of Public Health, 101*(12), 2217–2222. <https://doi.org/10.2105/ajph.2011.300279>
- Garza, M. A., Quinn, S. C., Li, Y., Assini-Meytin, L. C., Casper, E., Fryer, C. S., Butler, J. P., Brown, N. J., Kim, K. B., & Thomas, S. H. (2017). The influence of race and ethnicity on becoming a human subject: Factors associated with participation in research. *Contemporary Clinical Trials Communications, 7*, 57–63. <https://doi.org/10.1016/j.conctc.2017.05.009>
- Gilbert, L., Goddard-Eckrich, D., Chang, M., Hunt, T., Wu, E., Johnson, K. C., Richards, S., Goodwin, S., Tibbetts, R., Metsch, L. R., & El-Bassel, N. (2021). Effectiveness of a Culturally Tailored HIV and sexually transmitted Infection prevention intervention for black women in community supervision programs. *Effectiveness of a Culturally Tailored HIV and Sexually Transmitted Infection Prevention Intervention for Black Women in Community Supervision Programs JAMA Network Open, 4*(4), e215226. <https://doi.org/10.1001/jamanetworkopen.2021.5226>
- Gilbert, L., Raj, A., Hien, D. A., Stockman, J. K., Terlikbayeva, A., & Wyatt, G. E. (2015). Targeting the SAVA (substance Abuse, violence, and AIDS) syndemic among women and girls. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 69*(Supplement 2), S118–S127. <https://doi.org/10.1097/qa.0000000000000626>
- Goddard-Eckrich, D., Thomas, B., Gilbert, L., Afiah, A., Hunt, T., Sarfo, B., Wu, E., Mandavia, A., Chang, M., Matthews, L., Johnson, J., Rodriguez, S., Johnson, K., & El-Bassel, N. (2022). Leveraging randomized controlled trial design: HIV and wellness interventions with marginalized populations. *Research on Social Work Practice, 33*(2), 193–212. <https://doi.org/10.1177/10497315221121613>
- Goddard-Eckrich, D., Thomas, B., Gilbert, L., Aifah, A., Hunt, T., Sarfo, B., Wu, E., Mandavia, A., Chang, M., Matthews, L., Johnson, J., Rodriguez, S., Johnson, K., & El-Bassel, N. (2023). Leveraging randomized controlled trial design: HIV and wellness interventions with marginalized populations. *Research on Social Work Practice, 33*(2), 193–212. <https://doi.org/10.1177/10497315221121613>
- Golden, S. D., & Earp, J. A. (2012). Social ecological approaches to individuals and their contexts. *Health Education & Behavior, 39*(3), 364–372. <https://doi.org/10.1177/1090198111418634>
- Grella, C. E., Ostile, E., Scott, C. K., Dennis, M. L., & Carnavale, J. (2020). A scoping review of barriers and facilitators to implementation of medications for treatment of opioid use disorder within the criminal justice system. *International Journal of Drug Policy, 81*, 102768. <https://doi.org/10.1016/j.drugpo.2020.102768>
- Hailemariam, M., Bustos, T. E., Montgomery, B. W., Barajas, R., Evans, L. B., & Drahota, A. (2019). Evidence-based intervention sustainability strategies: A systematic review. *Implementation Science, 14*(1). <https://doi.org/10.1186/s13012-019-0910-6>
- Hinton, E., & Cook, D. A. (2021). The mass criminalization of black Americans: A historical overview. *Annual Review of Criminology, 4*(1), 261–286. <https://doi.org/10.1146/annurev-criminol-060520-033306>
- Hodder, S., Feinberg, J., Strathdee, S. A., Shoptaw, S., Altice, F. L., Ortenzio, L. F., & Beyrer, C. (2021). The opioid crisis and HIV in the USA: Deadly synergies. *The Lancet, 397*(10279), 1139–1150. [https://doi.org/10.1016/s0140-6736\(21\)00391-3](https://doi.org/10.1016/s0140-6736(21)00391-3)
- James, K., & Jordan, A. (2018). The opioid crisis in black communities. *Journal of Law Medicine & Ethics, 46*(2), 404–421. <https://doi.org/10.1177/1073110518782949>
- Johnson, K. C., Gilbert, L., Hunt, T., Wu, E., Metsch, L. R., Goddard-Eckrich, D., Richards, S., Tibbetts, R., Rowe, J. C., Wainberg, M. L., & El-Bassel, N. (2018). The effectiveness of a group-based computerized HIV/STI prevention intervention for black women who use drugs in the criminal justice system: Study protocol for E-WORTH (empowering

- African-American women on the road to health), a hybrid type 1 randomized controlled trial. *Trials*, 19(1). <https://doi.org/10.1186/s13063-018-2792-3>
- Kemmler, G., Hummer, M., Widschwendter, C. G., & Fleischhacker, W. W. (2005). Dropout rates in placebo-controlled and active-control clinical trials of antipsychotic drugs. *Archives of General Psychiatry*, 62(12), 1305. <https://doi.org/10.1001/archpsyc.62.12.1305>
- Klimas, J., Hamilton, M., Gorfinkel, L., Adam, A., Cullen, W., & Wood, E. (2021). Retention in opioid agonist treatment: A rapid review and meta-analysis comparing observational studies and randomized controlled trials. *Systematic Reviews*, 10(1). <https://doi.org/10.1186/s13643-021-01764-9>
- Latimore, A. D., & Bergstein, R. S. (2017). “Caught with a body” yet protected by law? Calling 911 for opioid overdose in the context of the Good Samaritan Law. *International Journal of Drug Policy*, 50, 82–89. <https://doi.org/10.1016/j.drugpo.2017.09.010>
- Levy, B., Paulozzi, L. J., Mack, K. A., & Jones, C. W. (2015). Trends in opioid analgesic-prescribing rates by specialty, U.S., 2007–2012. *American Journal of Preventive Medicine*, 49(3), 409–413. <https://doi.org/10.1016/j.amepre.2015.02.020>
- Marhefka, S. L., Lockhart, E., Turner, D., Wang, W., Dolcini, M. M., Baldwin, J. A., Roig-Romero, R. M., Lescano, C. M. & Glueckauf, R. L. (2020, May). Social determinants of potential eHealth engagement among people living with HIV receiving Ryan White case management: Health equity implications from project TECH. *AIDS and Behavior*, 24(5), 1463–1475. <https://doi.org/10.1007/s10461-019-02723-1>
- Melender, H. L. (2017, March). Development of evidence based practice in academic service partnerships: Experiences of working life representatives from social and health care sectors. *Nurse Education in Practice*, 23, 23–29. Epub 2017 Feb 9. PMID: 28214430 <https://doi.org/10.1016/j.nepr.2017.02.004>
- Nydegger, L. A., Claborn, K. R., & Zúñiga, M. L. (2020). Exploring patterns of substance use among highly vulnerable black women at-risk for HIV through a syndemics framework: A qualitative study. *PLOS ONE*, 15(7), e0236247. <https://doi.org/10.1371/journal.pone.0236247>
- Olbert, C. M., Nagendra, A., & Buck, B. (2017). Meta-analysis of Black vs. White racial disparity in schizophrenia diagnosis in the United States: Do structured assessments attenuate racial disparities? *Journal of Abnormal Psychology*, 127(1), 104–115. <https://doi.org/10.1037/abn0000309>
- Platt, L., Grenfell, P., Meiksin, R., Elmes, J., Sherman, S. G., Sanders, T., Mwangi, P., Crago, A., & Tsai, A. C. (2018). Associations between sex work laws and sex workers’ health: A systematic review and meta-analysis of quantitative and qualitative studies. *PLOS Medicine*, 15(12), e1002680. <https://doi.org/10.1371/journal.pmed.1002680>
- Rotter, M., & Compton, M. T. (2022). Criminal legal involvement: A cause and consequence of social determinants of health. *Psychiatric Services*, 73(1), 108–111. <https://doi.org/10.1176/appi.ps.202000741>
- Sankaré, I. C., Bross, R., Brown, A. F., Del Pino, H. E., Jones, L., Morris, D., Porter, C., Lucas-Wright, A., Vargas, R., Forge, N. G., Norris, K. C., & Kahn, K. L. (2015). Strategies to build trust and recruit African American and latino community residents for health research: A cohort study. *Clinical and Translational Science*, 8(5), 412–420. <https://doi.org/10.1111/cts.12273>
- Soyka, M., Zingg, C., Koller, G., & Kuefner, H. (2008). Retention rate and substance use in methadone and buprenorphine maintenance therapy and predictors of outcome: Results from a randomized study. *The International Journal of Neuropsychopharmacology*, 11(5). <https://doi.org/10.1017/s146114570700836x>
- Spaulding, A. C., Seals, R. M., Page, M. J., Brzozowski, A. K., Rhodes, W. T., Hammett, T. M., & Litvintseva, A. P. (2009). HIV/AIDS among inmates of and releasees from US correctional

- facilities, 2006: Declining share of epidemic but persistent public health opportunity. *PLOS ONE*, 4(11), e7558. <https://doi.org/10.1371/journal.pone.0007558>
- Stringer, K. L., Marotta, P., Goddard-Eckrich, D., Akuffo, J., Richer, A. M., El-Bassel, N., & Gilbert, L. (2020). Mental health consequences of sexual misconduct by law enforcement and criminal justice personnel among black drug-involved women in community corrections. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 97(1), 148–157. <https://doi.org/10.1007/s11524-019-00394-w>
- Stroup, T. S. (2006). Review: Higher rates of attrition in antipsychotic treatment arms of placebo controlled trials than in trials with active comparators. *Evidence-Based Mental Health*, 9(3), 70. <https://doi.org/10.1136/ebmh.9.3.70>
- Sun, H., Conrad, F. G., & Kreuter, F. (2020). The carryover effects of preceding interviewer–respondent interaction on responses in audio computer-assisted self-interviewing (ACASI). *Journal of Survey Statistics and Methodology*, 10(2), 299–316. <https://doi.org/10.1093/jssam/smaa019>
- Timko, C., Schultz, N. R., Cucciare, M. A., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal of Addictive Diseases*, 35(1), 22–35. <https://doi.org/10.1080/10550887.2016.1100960>
- Trowbridge, K., & Mische Lawson, L. (2016). Mindfulness-based interventions with social workers and the potential for enhanced patient-centered care: A systematic review of the literature. *Social Work in Health Care*, 55(2), 101–124. (Epub 2016 Jan 8. PMID: 26745592). <https://doi.org/10.1080/00981389.2015.1094165>
- Trusts, P. C. (2018). Probation and parole systems marked by high stakes, missed opportunities. *The Pew Charitable Trusts*. <https://pew.org/2CX6pZC>
- Unger, J. M., Gralow, J. R., Albain, K. S., Ramsey, S. D., & Hershman, D. L. (2016). Patient income level and cancer clinical trial participation. *JAMA Oncology*, 2(1), 137. <https://doi.org/10.1001/jamaoncol.2015.3924>
- U.S. Census Bureau QuickFacts. (2022). *U.S. Census Bureau QuickFacts: United States*. Census Bureau QuickFacts. <https://www.census.gov/quickfacts/fact/table/US/PST045221>
- Wippold, G. M., Frary, S. G., Abshire, D. A., & Wilson, D. K. (2021). Improving recruitment, retention, and cultural saliency Of health promotion efforts targeting African American men: A scoping review. *Annals of Behavioral Medicine*, 56(6), 605–619. <https://doi.org/10.1093/abm/kaab079>
- Wolff, N., & Shi, J. (2012). Childhood and adult trauma experiences of incarcerated persons and their relationship to adult behavioral health problems and treatment. *International Journal of Environmental Research and Public Health*, 9(5), 1908–1926. <https://doi.org/10.3390/ijerph9051908>
- Yearby, R. (2020). Structural racism and health disparities. *Journal of Law Medicine & Ethics*, 48(3), 518–526. <https://doi.org/10.1177/1073110520958876>
- Yousefi-Rizi, L., Baek, J., Blumenfeld, N., & Stoskopf, C. H. (2021). Impact of housing instability and social risk factors on food insecurity among vulnerable residents in San Diego County. *Journal of Community Health*, 46(6), 1107–1114. <https://doi.org/10.1007/s10900-021-00999-w>