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RESEARCH ARTICLE

Pilot of Methadone for Recently Incarcerated People with Human Immunodeficiency Virus and Opioid Use in South Africa

Urvisha Bhoora, MMed,^{1,2} Yangxi An,³ Jill Owczarzak, PhD,⁴ Pretty Ndini, MSc,⁵ Derrick Moyo, BSc,⁵ Shaun Shelly, MPhil,² Tessa S. Marcus, MSc, PhD,^{1,2} Laura Steiner, MSc,⁶ Peter C. Corcoran, MPH,⁴ Sarah Pollock, MHS,⁴ Moganki H. Lefoka, MA,^{1,2} Tonderai Mabuto, MSc, PhD,⁵ Jannie Hugo, MBChB, MFamMed,^{1,2} and Christopher J. Hoffmann, MD, MPH, MSc^{4-6,*}

Abstract

In South Africa, there is no provision of medication for opioid use disorder (MOUD) for people who are incarcerated or were recently incarcerated. This study aimed to describe MOUD uptake and barriers among people living with human immunodeficiency virus and using illicit opioids reentering the community from incarceration. A mixed-method exploratory study was conducted between September 2021 and September 2022 in South Africa, during which we offered low-barrier MOUD and harm reduction services. We followed 23 participants postrelease and observed a low uptake of MOUD after release (8 of 23, 35%). Reported barriers to MOUD included perceived ineffectiveness, a preference for residential withdrawal management, and delays in initiating MOUD. Innovation is needed in strategies to deliver MOUD and harm reduction in South Africa.

Keywords: HIV, opioid use, methadone, correctional facilities, South Africa, correctional health care

Introduction

Human immunodeficiency virus (HIV) and substance use disorders are prevalent in South Africa and are especially concentrated among people who are involved in the criminal justice system. Sharing of contaminated needles and other high-risk behaviors associated with substance use (e.g., increased number of sexual partners and decreased condom use) are important risk factors for HIV transmission (Aicken et al., 2011; Lier et al., 2024;

Zanoni et al., 2023). Furthermore, people using opioids often struggle with adherence to antiretroviral therapy (ART), leading to impaired health outcomes (Socias & Milloy, 2018).

The intersection of HIV and substance use is particularly evident among people exposed to the justice system. In South Africa, the prevalence of HIV in correctional facilities is 17.7%–25.3% compared with the overall population prevalence of 14% (Telisinghe et al., 2014; Zuma

¹Department of Family Medicine, University of Pretoria, Tshwane, South Africa.

²Community Oriented Primary Care Research Unit, Department of Family Medicine, University of Pretoria, Tshwane, South Africa.

³Department of Public Health Studies, Krieger School for the Arts and Sciences, Johns Hopkins University, Baltimore, Maryland, USA.

⁴Department of Health, Behavior and Society, Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, USA.

⁵Aurum Institute, Johannesburg, South Africa.

⁶Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA.

*Address correspondence to: Christopher J. Hoffmann, MD, MPH, MSc, Johns Hopkins University, CRB II – 1M; 1550 Orleans St., Baltimore, MD 21231, USA, Email: choffmann@jhmi.edu

et al., 2022), whereas an estimated 10%–20% of incarcerated people have an opioid use disorder compared with less than 1% in the general population (Harker et al., 2020; Naidoo et al., 2022; Naidoo & Mkize, 2012; Tlali et al., 2022). Following release from incarceration, people using illicit opioids are more likely to experience attrition from HIV care (Loeliger et al., 2018; Mabuto et al., 2020, 2024), whereas risk of harms such as overdose increases during community reentry (Altice et al., 2010; Binswanger et al., 2013; Masson et al., 2004; Meyer et al., 2013).

The provision of medication for opioid use disorder (MOUD) decreases opioid-related morbidity and mortality, increases ART adherence, and reduces recidivism among people living with HIV and opioid use (Parchinski et al., 2023; Springer et al., 2018). People reentering the community from incarceration benefit from sustained MOUD and HIV treatment engagement.

However, this population faces multiple challenges during community reentry that complicate retention in care for HIV and opioid use. Challenges include the need to reestablish social support, relearn decision-making skills, find stable housing, and generate income (Binswanger et al., 2013; Haley et al., 2014; Rabinovich et al., 2022; Smith et al., 2023). Studies from the United States report that the use of illicit substances increases postincarceration, and engagement in substance use services is low (Chamberlain et al., 2019; Martin et al., 2023; Rowell-Cunsolo & Bellerose, 2021).

Despite the rise in substance use disorders in South Africa, including heroin-based opioids locally known as *nyaope* and *whoonga*, treatment remains limited. Due to policy and cost, the country has fewer than 122 substance use treatment sites, and only one program, the Community Oriented Substance Use Programme (COSUP) in Tshwane, is funded by a local municipality and provides community MOUD (Shelly et al., 2019). There are no MOUD services within correctional facilities or for people reentering the community after release from incarceration due to policies, priorities, and costs (An et al., 2023).

The country's most recent National Drug Master Plan, covering 2019 to 2024, recommended a shift toward harm reduction and provision of MOUD, including in correctional settings (Department of Social Development of the Republic of South Africa, 2020). To inform future programmatic implementation and contribute to HIV control efforts, we piloted provision of harm reduction and MOUD services among people recently released from incarceration and living with HIV and illicit opioid use.

Method

Study Site

This study took place in the Kgosi Mampuru II Correctional Management Area and the Tshwane district in

Gauteng, South Africa. Kgosi Mampuru II is a correctional facility with an average census of between 7,000 and 8,000 individuals. It has medical facilities on-site for acute care and primary health care, including HIV testing and ART treatment. No medical services for substance use are provided. Upon release, most people return to urban and peri-urban communities in the Tshwane district.

Study Design

We conducted a longitudinal explanatory mixed-method study. Qualitative findings were used to explain quantitative findings. Formerly incarcerated individuals living with HIV and self-reported illicit opioid use who were interested in participating in a substance use intervention were prospectively enrolled. Recruitment occurred either in the correctional facility or in the community among individuals who were expected to be released within 90 days. Potential study participants with anticipated release within 90 days were referred by correctional facility health staff for screening. Additional inclusion criteria required subjects to be greater than or equal to 18 years old and planning to reside in or near Tshwane district upon release.

This study was completed in compliance with the principles of the Declaration of Helsinki. All participants provided written informed consent. Ethical approval was provided by the University of the Witwatersrand Human Research Ethics Committee, the University of Pretoria Human Research Ethics Committee, the South African Department of Correctional Services, and the Johns Hopkins University School of Medicine Institutional Review Board.

Service Provision

Participants enrolled in the study were offered harm reduction and MOUD services provided by COSUP. COSUP is a program implemented by the University of Pretoria in the City of Tshwane Metropolitan Municipality. COSUP provided services within Tshwane at 16 fixed sites and through mobile outreach. Sites were staffed by midlevel clinicians or clinical associates, social workers, care coordinators, peer educators, information officers, and family physicians.

Services included housing support, skills development, medical review and referral, harm reduction services, and MOUD. Harm reduction services included needle and syringe exchange, HIV testing, condom provision, individual counseling, and peer support groups. MOUD available through COSUP was primarily methadone. Because of cost and regulatory barriers, buprenorphine/naloxone use was limited to clients for whom methadone was contraindicated; naltrexone was not available and is

logistically complex to use (Fipps, Oesterle, & Kolla, 2024). Methadone initiation and dose titration were done during daily directly observed therapy. Once a client reached maintenance dose, methadone was dispensed weekly.

Study participants received COSUP's standard two-step approach to MOUD. Step one involved a risk assessment with the use of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST; WHO ASSIST Working Group, 2002) delivery of information on COSUP services, including drop-in counseling and harm reduction; a schedule of group meetings; a brief substance use intervention using motivational interviewing; and a schedule of subsequent medical reviews. Step two involved a medical review by a clinical associate and medical doctor, including pregnancy testing, urine toxicology, and a medical evaluation for prescribing MOUD. Following the first contact and enrollment, COSUP social workers made unscheduled telephonic check-ins with participants, particularly when participants had not accessed a COSUP site for several weeks.

Data Collection

Participants completed a baseline interview that included demographic and locator information. Within 1 week of release or community enrollment, each participant met with a study team member and a COSUP staff member. These meetings took place at the COSUP site closest to participants' places of residence or at a COSUP site convenient for the participant. A brief interview was conducted to collect postrelease data and to update the locator information. This interview was followed by an assessment and information session.

At 30, 60, 120, and 180 days postenrollment, additional survey data were collected by study team members regarding housing, sources of income, HIV care engagement, and COSUP services engagement. Participants were also asked to provide clinic cards to verify any self-reported HIV care engagement.

At these four time points, qualitative interviewers conducted in-depth interviews (IDIs) to understand postincarceration substance use, experience with MOUD, and community reentry. The interview guide for the first interview included the following domains: personal background and typical day, social support, drug use, COSUP experiences, and HIV care experiences (see Supplementary Data). The interview guide for subsequent interviews focused on understanding patterns or changes (if any) in those domains.

Most IDIs were between 40 minutes and 1 hour long, and they were conducted in English, Sepedi, or Setswana. The IDIs were audio-recorded and supplemented by notes. Audio recordings were professionally transcribed and translated into English and quality checked.

Final transcripts were uploaded to MAXQDA software (VERBI Software, Germany) for analysis.

Data Analysis

Descriptive frequencies were calculated for sociodemographic characteristics, harm reduction services uptake, HIV services uptake, and MOUD initiation and maintenance. Qualitative data were analyzed thematically, using deductive and inductive coding. Transcripts were read by two researchers for data familiarization. Thereafter, concepts were explored using an a priori coding guide with codes that included living environment, relationships, social support, HIV, substance use, stigmatization, COSUP services, and use of MOUD. Under each code, inductive subcodes were created to define common domains.

For this analysis, only findings related to MOUD service uptake are presented. To account for the longitudinal nature of the data, codes generated from 30-, 60-, 120-, and 180-day interviews for each participant were read in chronological order, and consistencies and changes were noted in descriptive summaries for each participant.

Results

From September 2021 to September 2022, 37 people living with HIV and reporting illicit opioid use were enrolled; 23 were released from incarceration and were eligible for receiving postrelease services from COSUP. The remaining 14 participants had delays in release because of failure to meet conditions for parole (e.g., found with illicit drugs or failed a urine toxicology test) and were not included in the analysis. The participants' median age was 32 years (interquartile range [IQR]: 31, 38); 19 of whom (83%) self-identified as men. At baseline, all participants reported previous opioid use, and 21 (91%) reported opioid use in the past 3 months, including while incarcerated (Table 1).

All 23 participants partook in an initial postrelease discussion and motivational interviewing session on harm reduction. Of these, 22 (96%) had at least one session with a COSUP social worker and 20 (87%) completed ASSIST screening. Seventeen of the 20 (85%) scored high risk for opioid use and three (15%) scored medium risk. Seven participants scored high risk for cannabis, one for cocaine, and two for amphetamine-type stimulants.

Following the initial assessment, more than half of the participants (13, or 56.5%) returned for one or more subsequent visits to a COSUP site; nine (39%) participants had only one visit, and one participant chose to have an initial home visit and never visited a COSUP site. During the study period, six (26%) participants accessed needle and syringe services, and eight (35%) were initiated on MOUD. Of those who initiated MOUD, all received

Table 1. Participant Characteristics at Baseline

Characteristics	n (%)
Total	23 (100)
Sex	
Male	19 (83)
Female	4 (17)
Age group	
20–29	3 (13)
30–39	18 (78)
40–49	2 (9)
Primary sexual identity	
Man who has sex with women	19 (83)
Woman who has sex with men	3 (13)
Bisexual woman	1 (4)
Ethnic group	
Black/African	20 (87)
White/European	2 (9)
Indian/Asian	1 (4)
Number of incarceration episodes (including index)	
1	0
≥ 2	23 (100)
Last opioid use	
In the past 3 months	21 (91)
Not in the past 3 months	2 (9)
Injection drug use	
Yes, in the past 3 months	19 (83)
Yes, but not in the past 3 months	1 (4)
Never	3 (13)
Site of HIV diagnosis	
In correctional center	15 (65)
Outside correctional center	8 (35)
Site of ART initiation	
In correctional center	19 (83)
Outside correctional center	4 (17)

ART, antiretroviral therapy; HIV, human immunodeficiency virus.

methadone, and seven of eight (88%) remained on methadone until the end of the observation period (Table 2). The median time from first COSUP visit to methadone

Table 2. Health Service Access During Observation

Service usage	n (%)
Accessed needle syringe program	
Yes	6 (26)
No	17 (74)
Initiated MOUD (methadone)	
Yes	8 (35)
No	15 (65)
Participants still on methadone at the end of observation	7 (88)
Engaged in HIV care within 180 days postrelease (verified with HIV clinic cards)	
Yes	13 (57)
No	10 (43)

MOUD, medication for opioid use disorder; HIV, human immunodeficiency virus.

initiation was 66 days (IQR: 22, 245). The shortest time to methadone initiation was 6 days after the initial assessment.

Verified linkage to HIV treatment within 180 days occurred for 13 (57%) participants. Among the 13 participants who linked to HIV treatment, 8 (62%) were receiving methadone. None of the 10 participants who did not link to HIV treatment had initiated methadone.

We used the qualitative findings to explore reasons for the low methadone uptake. We organized findings into two themes as follows: the value of methadone and barriers to methadone initiation.

Value of Methadone

The primary values of methadone were to enable cessation of *nyaope* use or significantly reduce consumption, avoid negative drug-related symptoms or episodic withdrawal, and to return to normal function. Several participants described that being on methadone allowed them to successfully stop using *nyaope*. For example, one participant stated: “So, I just want to be the example to those people. To tell them that methadone works, I quit because of methadone” (35-year-old woman).

Another participant described the role of methadone in cessation as follows:

“And it was easy, it was easy in such a way. . . that I was able to. . . meaning methadone made things to be simpler, you see. Very simple to be able to quit drugs without. . . (pause) obvious I was not going to quit, there was no way” (39-year-old man).

Both participants’ descriptions suggested either an initial skepticism toward methadone or presented themselves as an example disproving general negative perceptions regarding the lack of effectiveness of methadone.

Some participants described a resolution of symptoms related to chronic *nyaope* use and/or withdrawal once they were on a stable dose of methadone. This included eliminating the “edge” or “stress” with *nyaope* use. The stress was presumably a combination of symptoms related to *nyaope* use and partial withdrawal and the stress of constantly hustling to obtain drugs to minimize episodes of withdrawal. One participant described: “I no longer have that stress that I used to have before, you see. . .” (39-year-old man). While another described the benefit as follows: “Methadone works. . . it works, it takes away the edge. It takes away that feeling of needing the use. . . it puts the cramps aside” (49-year-old man).

The combination of facilitating cessation, reducing overall stress of drug seeking, and eliminating withdrawal symptoms allowed some participants to feel like they returned to a state of “normalcy.” One participant, a 35-year-old woman, described this as transformative: “I feel like I am a newborn again. It feels like I am a newborn baby.” Another participant, a 35-year-old man,

described the following: “I just feel as if I am normal. . . That’s what makes me drink this thing [methadone] so that I do not think about smoking [injecting or inhaling *nyaope*] again.”

Barriers to Service Usage

Barriers to methadone initiation included commonly held skepticism about its effectiveness, a perception that cessation-based programs were more effective (especially inpatient programs), and logistical challenges with accessing COSUP sites.

One justification for being skeptical was reporting that they had observed people on methadone continuing to use *nyaope*. These types of secondhand observations were nearly universal among participants questioning the value of methadone. Only one of the study participants had used methadone previously. This extended to perceptions of methadone only partially addressing symptoms of craving. “At COSUP, they give you methadone, it does not stop *alostro* [craving]. . . It minimized its [drugs’] effects for some time for like ten minutes. After that, the *alostro* becomes worse, it becomes high” (31-year-old man).

Another concern, coming from a 49-year-old man, was that methadone could lead to greater dependency. Some participants felt that if they really wanted to, they could stop using *nyaope* but expressed that methadone could be a harder addiction to control. “I know people who actually do it [methadone] and they love that. . . Eh. . . I don’t wanna become a junkie. And methadone is a sure. . . gateway to becoming a junkie.”

A few participants explained that they did not engage with MOUD services because they wanted to receive withdrawal management as an in-patient to achieve abstinence. They believed that the abstinence approach was superior. In the words of a 32-year-old male participant, “You see, I told the lady at COSUP that the one thing that will really help me is rehabilitation.”

Another theme was frustration with the assessment process leading to delays in initiating MOUD. For some, this led to eventual loss of interest in MOUD. Several participants expressed interest in MOUD upon enrollment into the study and at their 30-day postrelease interview. For instance, during his 30-day interview, one 39-year-old male participant said: “I wanted to. . . get methadone so that I can reduce my drug dosage.” However, at a later interview, he reported having felt frustrated with still not being initiated on MOUD: “Yes [it’s taking] a while hey my brother. . . I saw it as a waste of time.”

Discussion

We observed low uptake of MOUD despite a low barrier to access and the expressed interest among our

participants in being part of a study of MOUD. We identified several common perceptions regarding methadone that served as barriers to initiation, including that methadone replaces one addiction with another, that methadone is ineffective in achieving cessation from illicit opioids, and that travel distances and delays in processes hindered access. A related theme was a preference for abstinence-based substance use management.

Our findings of low MOUD uptake after release from incarceration are consistent with prior studies from the United States, Europe, and Asia. Multiple studies have reported postrelease methadone uptake in the range of 9% to 30% (Azbel et al., 2018; Bachireddy et al., 2022; Dorgay et al., 2022; Liberman et al., 2022; Moore et al., 2019; Sharma et al., 2016).

The themes that we identified from the qualitative interviews of doubts regarding the effectiveness of methadone, perceptions that methadone is simply exchanging one drug for another, a preference for abstinence approaches, and logistical barriers, are consistent with findings from previous studies among justice-involved individuals (Cioe et al., 2020; Joudrey et al., 2021; Khazae-Pool et al., 2018; Liberman et al., 2022; Xu et al., 2012). In addition, transportation time and cost were barriers to service usage in our study, factors that have been previously reported in South Africa and high-income settings (Joudrey et al., 2020; Krawczyk et al., 2017; Mabuto et al., 2024; Nyashanu et al., 2024).

Several other previously reported themes did not emerge in our work. Specifically, we did not identify hesitancy of methadone uptake due to prior negative experiences with methadone. For example, fear of forced withdrawal from methadone, if incarcerated again, has been reported as a barrier in the United States (Fu et al., 2013). The rigidity of methadone treatment, including daily pickup visits in the United States, was also something we did not identify (Gordon et al., 2011; Rodger et al., 2023). This may be because weekly dispensing of methadone after initial dose titration and stabilization is the standard practice in the program described in this article.

In addition, prior research from the United States has identified stigma around methadone use as a barrier, another theme that we did not identify (Allen et al., 2019), but that has been previously reported from South Africa (Domingo et al., 2022). This theme may have not emerged because participants had so many other pressing issues while reentering the community after incarceration and already were managing intersecting stigma related to having been incarcerated and living with HIV. The reason that we did not identify themes of withdrawal from methadone may reflect the far more limited experience with methadone among people using opioids in South Africa than the United States and Europe.

In South Africa, specific challenges to MOUD delivery in correctional facilities and the community include the high cost of methadone, regulatory barriers that include methadone not being part of the essential drugs list, the primary responsibility of substance use management lying with social rather than health departments, and a tradition of cessation-based approaches to substance use. These are all surmountable barriers if there is a clear belief in the value of MOUD from implementers and potential clients. We believe that integrating MOUD programs into the correctional system and community health services would facilitate smoother transitions and lead to greater success with reentry into the community and long-term health.

Health education interventions, including community awareness campaigns that deliver thorough, clear information on the nature and mechanisms of MOUD, may help reduce potential misconceptions and enhance treatment engagement (Nyashanu et al., 2024). Particular attention should be directed toward individuals who had personal or secondhand experience with MOUD in non-clinical settings. Given that different treatment types (e.g., residential versus outpatient and withdrawal management versus maintenance MOUD) have varying strengths and weaknesses, program staff should work with individual patients to understand reasons for treatment preferences and provide comprehensive explanations for the potential benefits and risks associated with each option.

We observed higher HIV treatment engagement (57%) following correctional facility release than has been previously reported (43%) in South Africa (Mabuto et al., 2020). It is possible that the higher care engagement reflects the benefits of MOUD provision, a finding consistent with the literature from both high-income and resource-limited settings (Fanucchi et al., 2019; McNamara et al., 2021). Joint provision of HIV and MOUD at a single service point may alleviate the competing priorities of treating both conditions among a dual-diagnosed population (Bradford et al., 2023; Duffy et al., 2022).

Ideally, like ART, methadone may be initiated as part of health management within correctional facilities as part of long-term methadone maintenance therapy (Cates & Brown, 2023). In particular, prior studies from high-income settings have reported that individuals who received MOUD during incarceration were more likely to enter community treatment compared with those who received postrelease referrals (Kinlock et al., 2005; McKenzie et al., 2012; Rich et al., 2015). This approach with the provision of MOUD in correctional facilities has been successfully implemented in multiple settings and countries (Alam et al., 2019; Stover et al., 2021).

The study's strengths include demonstrating the feasibility of provision of routine MOUD services in the community to people with criminal justice system

involvement. There are also several limitations. Participants constituted a small sample and were recruited from one correctional facility or one postrelease area. As a result, they do not represent the full population of people with criminal justice involvement and opioid use in South Africa. Notably, most study participants were male, reflecting more than 95% of people who are incarcerated in South Africa (Mabuto et al., 2020). Factors including hesitancy to self-identify as using opioids during incarceration and delays in release due to ongoing substance use may have impeded recruitment of a larger sample and may have impacted representativeness.

We believe that our findings regarding harm reduction and community MOUD uptake in South Africa demonstrate important challenges and considerations for service delivery. Specific lessons include the need to address community health literacy around MOUD, safely reduce the time to initiation of treatment, increase accessibility of MOUD pickup points, and develop one-stop HIV/MOUD delivery. The inclusion of MOUD and harm reduction services into correctional systems, public primary care clinics, and community health centers needs to be considered to improve the health of this population and the communities in which they reside.

Conclusion

This article has identified specific structural and individual barriers to MOUD and harm reduction engagement among formerly incarcerated people living with HIV and opioid use disorder in South Africa. Lower barriers to accessing services and initiating MOUD, increased understanding of the role of methadone, and MOUD integration into correctional and community health programs may help improve outcomes for people living with HIV who use illicit opioids.

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Data Availability Statement

The de-identified datasets used and/or analyzed in the current article are available from the corresponding author on reasonable request. The qualitative datasets are not publicly available to protect the participants' privacy and confidentiality, particularly given the small sample size and the study's geographic specificity. Study participants with stigmatized traits disclosed rich, detailed, and sensitive information that may unintentionally reveal their identities.

Authors' Contributions

C.J.H. obtained funding; C.J.H., T.M., U.B., T.S.M., and J.O.: Conceived of and designed the study; C.J.H., T.M.,

T.S.M., J.O., U.B., P.N., and D.M.: Developed study tools, including the focus group discussion guide; U.B., P.N., and D.M.: Collected data; Y.A., U.B., P.N., S.P., D.M., S.S., and J.O.: Conducted analysis; U.B.: Wrote a first draft; and Y.A., C.J.H., U.B., P.N., D.M., L.S., P.C.C., S.P., M.H.L., T.S.M., J.H., J.O., and T.M.: Contributed to article development. All authors reviewed and agreed with the submitted version.

Author Disclosure Statement

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

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Supplementary Material

Supplementary Data

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