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# Characteristics of women on opioid substitution therapy in primary healthcare in Tshwane (South Africa): a retrospective observational study

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## **Abstract**

### **Background**

Women who use drugs face specific challenges compared to men, such as higher rates of HIV infection, unsafe injecting practices and intimate partner violence. However, this population's access to drug dependence treatment and gender-sensitive interventions remains limited, leading to unmet needs and increased vulnerability.

### **Aim**

To investigate the characteristics of and associations with retention in care among women on opioid substitution therapy (OST) in a community based primary care setting.

### **Design and setting**

A descriptive observational study within the Community Orientated Substance Use Programme in Tshwane, South Africa.

### **Methods**

Data from 199 women ( $\geq 18$  years) on OST was extracted from an electronic database and paper-based files. Data was analysed descriptively, and inferential analysis looked for association of variables with retention on OST for  $\geq 6$  months.

### **Results**

Majority of participants were unemployed, with 44.3% falling within the 20-29 years age range. During the initiation and course of OST, 39.2% of women experienced intimate partner violence, and 19.0% were pregnant. Retention on OST was significantly associated with increasing age at initiation ( $p=0.047$ ), knowledge of HIV status ( $p=0.029$ ), an increase in the ASSIST score ( $p=0.023$ ), and methadone dose ( $p<0.001$ ). Factors such as race, employment status, health system level, pregnancy, intimate partner using substances, intimate partner violence, route of administering opioids, and having tuberculosis and/or hepatitis C exposure did not show a significant relationship with retention on OST ( $p>0.05$ ).

### **Conclusion**

This study reveals specific vulnerabilities in women receiving OST, emphasising the need for the integration of interventions to address reproductive health, violence mitigation, infectious disease and polydrug use into care.

### **Keywords**

Community based primary care, women, harm reduction, addiction medicine, opioid substitution therapy, retention in care.

## Introduction

The escalating global prevalence of substance use, which caused 30.9 million healthy life years lost in 2021, underscores the urgency for effective interventions.(1) The high HIV burden among people who inject drugs (PWID) in sub-Saharan Africa,(2–6), estimated at 21% in South Africa in 2017,(5) is particularly alarming.

Services often neglect the unique challenges faced by women who use drugs (WWUD).(2,6) Research data disproportionately focuses on men, contributing to the invisibility of WWUD and their vulnerabilities.(6,7) Women remain understudied, relevant reports often lack a gender focus, and some interventions do not acknowledge gender differences or who has access to treatment within the field of substance use.(6) WWUD are at increased risk of HIV infection from engaging in sex work, challenges in condom negotiation with sexual partners, and exposure to unsafe injecting practises.(8) Other vulnerabilities experienced by WWUD are mental health issues, intimate partner violence (IPV), having an intimate partner who uses substances, losing child custody, infertility, complications during pregnancy; and stigma, affecting their access to sexual and reproductive health, harm reduction and other decentralised healthcare services.(6–13) Across the globe, policymakers, service providers and WWUD are calling for decentralised gender sensitive services as this achieves “optimal access”.(14)

Harm reduction encompasses a range of evidence-based interventions, including opioid substitution therapy (OST).(9,15,16) These interventions are provided in a non-judgmental environment and reduce adverse health and socio-economic consequences of substance use.(9) Using opioid agonist medications like methadone or buprenorphine in OST as maintenance therapy, rather than detoxification, enhances treatment retention, decreases risky behaviours, and effectively addresses associated health issues, such as infectious diseases and mental health conditions.(15-19) Furthermore, OST accompanied by psychosocial support, access to housing, employment, peer support and counselling enhances outcomes.(4) Where there is gender responsiveness in OST services, women have positive outcomes, particularly those who have parental responsibilities or are pregnant.(4,13,20)

South Africa is one of five African countries that provides community-based OST.(9) Within South Africa, the Community Orientated Substance Use Programme (COSUP) in Tshwane, Gauteng, exemplifies a commitment to comprehensive harm reduction(16,21). However, challenges persist in understanding the utilisation patterns of harm reduction programs, such as COSUP. Recruiting WWUD to participate in studies on OST retention and prevalence of HIV and Hepatitis C is challenging.(22-24) Furthermore, data from the South African Community Epidemiology Network (SACENDU) suggests an underrepresentation of women in drug dependence treatment, indicating a gender imbalance.(2) This raises concerns about the ability of substance use programmes to reach and address the specific vulnerabilities faced by WWUD. This study aimed to evaluate the socio-demographics, substance use patterns, and retention of women using COSUP's OST services.

## Methods

### **Study design**

This was a descriptive observational study using existing data collected by COSUP.

### **Setting**

COSUP primarily services urban and peri-urban communities in South Africa's largest metropolitan city, Tshwane. A city comprising of residential, educational, and industrial areas making it a diverse and representative setting for such a study.

COSUP operated 17 sites located at health and social institutions in the public, non-government, academic and private sectors. Sites included community health centres, regional hospitals, non-government organisations (NGOs) and homeless shelters. By 2022, COSUP had registered over 5000 service users. Sites provide harm reduction services, psychosocial support, and safe social spaces through interdisciplinary teams comprising of clinical associates, nurse practitioners, doctors, social workers, peer educators and community health workers.

The programme screens for risky substance use using the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) 3.0, which is a standardised tool that assesses the frequency, quantity, and negative consequences (health, legal, social and financial) of substance use in the past three months.(25,26) Based on their responses, people are classified into one of three risk categories for each drug: lower risk with no intervention (scores from 0 to 10 for alcohol, 0 to 3 for all other drugs), moderate risk who receive a brief intervention (scores from 3 to 27), and higher risk who receive more intensive treatment (scores >27).

### **Study population**

The study population was all cis/transgender women ( $\geq 18$  years old) with opioid use disorder in Tshwane, initiated on OST by COSUP between December 2016 and January 2022. No sampling was performed; the entire study population was included.

### **Data collection**

Data were abstracted from electronic databases and paper-based records. The OST database provided information on age, gender, race, location, substance use practices, employment status, infectious diseases (HIV, hepatitis C and tuberculosis status) on initiation, along with OST type, daily maintenance dose and reasons for terminating OST. To ensure reliability of the data 15% of the electronic data were cross-checked with the paper-based records. Data on specific risk factors such as history of gender-based violence, having a sexual partner who uses substances, and history of pregnancy while on OST were extracted from the paper-based records. Unrecorded data points were marked as missing, and denominators adjusted during analysis.

## **Data analysis**

The Statistical Package for Social Sciences (SPSS) version 28.0.0.0 was used for data analysis. Categorical data were reported as percentages and frequencies. Numerical data were analysed for mean and standard deviation or median and interquartile range, depending on the distribution.

COSUP considers a service user as retained if they remain in OST services for at least six months. Initial uninterrupted retention on OST was used as the dependent variable for inferential analysis. The total months on OST, despite interruptions before the six month mark, were calculated by summing durations across all initiation episodes. Mean total ASSIST score was calculated by averaging the individual ASSIST scores across multiple drugs for each participant before the initiation of OST. To assess factors associated with retention and nominal categorical variables (age, race, employment status, health facility, route of administering opioids, HIV infection, Hepatitis C exposure, and type of agonist), the Kruskal-Wallis test was used. The Mann Whitney U test was used to assess the association with retention across binary categorical variables (pregnancy while on OST, drug use by intimate partner, intimate partner violence, screened for TB, TB infection, and HIV treatment enrolment). To assess the relationship between retention and ASSIST scores, Spearman's correlation was used.

## **Results**

### **Characteristics upon initiation of OST**

Table 1 presents a summary of the characteristics of the 199 women at OST initiation. The mean age was 31.5 (SD 7.5) years. Almost all were cisgender (99.5%) and the majority identified as black women (66.8%). Most were seen in non-governmental facilities (141, 70.9%), run independently or in partnership with the University of Pretoria. During the period of either initiating or being maintained on OST, 19.2% of the participants were pregnant. Few participants had formal employment, with less than 6.0% having the means to generate their own income.

**Table 1: Characteristics of women upon initiation of opioid substitution therapy**

<b>Variable</b>	<b>n (%)</b>
<b>Age on initiation (N=183)</b>	
16-19 years	2 (1.1)
20-29 years	81 (44.3)
30-39 years	77 (42.1)
40-49 years	15 (8.2)
50-59 years	8 (4.4)
<b>Race (N=199)</b>	
Black	133 (66.8)
Coloured	17 (8.5)
White	44 (22.1)
Indian or Asian	5 (2.5)
<b>Gender (N=199)</b>	
Cisgender women	198 (99.5)
Transgender women	1 (0.5)

<b>Pregnant at initiation or while on OST (N=125)</b>	24 (19.2)
<b>Employment status (N=184)</b>	
Unemployed	174 (94.6)
Employed	6 (3.3)
Self-employed	4 (2.2)
<b>Type of health facility where OST was accessed (N=199)</b>	
Community venues run by non-governmental organisation	56 (37.0)
Community venues run by University of Pretoria	8 (4.0)
PHC facilities run by non-governmental organisations/University of Pretoria	77 (38.7)
PHC facilities run by local municipality	18 (9.0)
PHC facilities run by provincial government	25 (12.5)
District hospitals	8 (4.0)
Regional hospital	7 (3.5)

PHC = Primary Health Care. Coloured = South African race classification for individuals of mixed race/ethnicity

### **Intimate partner substance use and violence**

Overall, 78 (39.2%) reported having an intimate partner upon initiation and whilst on OST. Of these partners, 64 (82.1%) used substances and IPV was reported by 29 (37.2%) women.

### **Substance use practices**

In 55.4% (102/184) of women, the most common route of administering opioids was injection, followed by smoking (42.4%, 78/184), snorting (1.1%, 2/184), or ingesting over the counter opioids (1.1%, 2/184). A substantial proportion of the women scored high risk for opioids (87.3%), cannabis (22.7%), tobacco (22.1%) and cocaine (16.0%). The mean total ASSIST score was 8.0 (SD 2.3)(Table 2).

**Table 2: Risk categories for substance use as assessed by the ASSIST 3.0 score (N=181)**

<b>Substance</b>	<b>Low or no risk n (%)</b>	<b>Moderate risk n (%)</b>	<b>High risk n (%)</b>
Tobacco products	8 (4.4)	133 (73.5)	40 (22.1)
Alcohol	158 (87.3)	18 (9.9)	5 (2.8)
Cannabis	85 (47)	55 (30.4)	41 (22.7)
Cocaine	132 (72.9)	20 (11.0)	29 (16.0)
Amphetamine-type stimulants	165 (91.2)	13 (7.2)	3 (1.7)
Inhalants	179 (98.9)	1 (0.6)	1 (0.6)
Sedatives and sleeping pills	167 (92.3)	11 (6.1)	3 (1.7)
Hallucinogens	180 (99.4)	1 (0.6)	0 (0.0)
Opioids	0 (0.0)	23 (12.7)	158 (87.3)
Other drugs	180 (99.4)	1 (0.6)	0 (0.0)

### **Communicable diseases and treatment enrolment**

Seventy four women (37.2%) were living with HIV and 48 (24.1%) had an unknown HIV status. Among those living with HIV, 75.7% (56/74) were receiving antiretroviral treatment. Overall, 145 (72.9%) of all women were screened for TB, and six (4.1%) were diagnosed and started on treatment.

Hepatitis C prevalence was difficult to assess with only 36 (18.1%) tested, among whom 18 (50.0%) tested positive.

### **OST type, dose, and duration on treatment**

Methadone was prescribed in 175 (87.9%) of women, with a median daily dose of 40mg (IQR 30-50mg), followed by buprenorphine-naloxone (22, 11.1%) with a median daily dose of 8mg (IQR 4-8mg) and tramadol (2, 1.0%) with a median daily dose of 350mg (IQR 300-400mg). The median duration of uninterrupted OST for women was 6.0 months (IQR 1.5-17.7). When including the total number of months on OST, for those that were re-initiated after terminating treatment, the median increased to 7.1 (IQR 1.9-17.9) months.

### **Reasons for terminating OST**

Women discontinued therapy for different reasons (Table 3). Lost to follow-up (LTFU) with no known reason for discontinuation (43.6%) and returning to substance use (12.9%) were the most common reasons.

**Table 3: Reasons for termination of OST (N=140)**

<b>Reasons</b>	<b>n (%)</b>
LTFU, reason unknown	61 (43.6)
Returned to substance use	18 (12.9)
Self-discharged	15 (10.7)
LTFU, following poor adherence to OST programme	11 (7.9)
Deceased	11 (7.9)
Relocated	10 (7.1)
In-patient rehabilitation	8 (5.7)
Incarcerated	5 (3.6)
Hospitalised	1 (0.7)

### **Factors associated with retention on OST**

Supplementary Table 1 presents factors associated with retention on OST. Age categories were significantly associated with retention on OST ( $p=0.047$ ) and increasing age was also significantly correlated ( $r=0.210$ ,  $p=0.004$ ). Unknown HIV status was associated with significantly worse retention compared to those who knew their status ( $p=0.029$ ). An increasing ASSIST score ( $r=0.171$ ,  $p=0.023$ ) and dose of methadone ( $r=0.339$ ,  $p<0.001$ ) were also positively correlated with retention. Other factors were not associated with retention on OST ( $p>0.05$ ). There were insufficient data to assess associations for gender or tramadol with retention on OST.

## **Discussion**

### **Summary of key findings**

The majority of WWUD were young, unemployed, cisgender, and accessed OST at NGO facilities. One in three women experienced IPV, and 19% were pregnant whilst on OST. In addition to opioid dependence, participants had significant risks associated with tobacco, cannabis, and cocaine. A

quarter had unknown HIV status, although HIV prevalence was notable. Lost to follow up was the main reason for discontinuation. Methadone was the primary agonist, and retention improved with higher age at initiation, knowledge of HIV status, higher methadone dose, and higher mean total ASSIST score. The counterintuitive link between a higher mean total ASSIST score and improved retention may be clarified by considering that this mean score reflects the cumulative severity of polydrug use assessed prior to OST initiation, suggesting a potential link between the complexity of substance dependence and a need for longer duration of treatment engagement. The other factors measured were not associated with retention in the non-adjusted analysis.

### **Strengths and limitations**

This study contributes to the available literature on WWUD in South Africa and offers an accurate description of the women on OST in COSUP. Data accuracy was verified using medical records, particularly for time on OST (retention). The variables that could be analysed were also limited to the data that COSUP routinely collected. The survey design and limited variables might have impacted inferential statistical power. However, there were few borderline p values, suggesting that a lack of power was not a major issue. The retrospective cross-sectional design hinders establishing causal relationships, warranting caution in interpreting effectiveness of OST for women with an opioid disorder. Factors influencing or confounding these associations may exist, and regression modelling could have provided deeper insights.

### **Comparison with existing literature**

Aligned with broader local and global studies (2,27-30), the results affirm that women susceptible to substance use disorders, typically aged 18 to 35, unemployed, and using injected substances, seek treatment at non-governmental facilities. The utilisation of non-governmental services, aligns with international standards emphasising the role of NGOs, location, staffing, and provider attitudes.(15)

The study delves into the intersectionality of factors impacting WWUD, including substance use practices and related harms such as IPV and communicable disease and their sexual and reproductive health needs.(15) Pregnancy motivates treatment enrolment with some women being characterised as “future-orientated”, and motherhood seen as a chance for a “drug-free future”.(31) However, pregnant women on OST face challenges in managing substance use, compounded by a ‘stigmatised identity’ and their own guilt or fears about potential harm to their infant.(32,33) This not only serves as a barrier to accessing services, but also points to a gap in the literature. Existing studies tend to prioritise the effects of substance use on the foetus and infant, neglecting the holistic experiences of pregnant women accessing harm reduction services.(32-34)

Despite the absence of specific associations with individual drugs, the comprehensive evaluation through the mean ASSIST scores suggests that the use of other substances has an effect on OST retention. Such high risk substance use warrants enrolment in harm reduction services as per guidelines.(35,36) Opioid substitution therapy is effective in reducing risky opioid, stimulant and

benzodiazepine use post-initiation, although no reduction has been observed in cannabis or daily alcohol use.(37)

The prevalence of IPV was higher than the national prevalence of 13.1% reported in 2017. The age range, urban dwelling, socioeconomic status and association between IPV and substance use have been found in other studies.(27,38,39,40). In mapping out harm reduction services across the globe, the Women and Harm Reduction International Network found that women in Africa reported that harm reduction services were limited, male dominated and that they were stigmatised or discriminated against and subjected to IPV.(41)

Historically, COSUP primarily addressed unregulated substance use and not infectious diseases.(42) This may explain the low screening, testing and treatment enrolment rates for HIV, TB and HCV. With HCV being largely asymptomatic there is a need to implement screening as part of every encounter with PWUD.(43,44) The HIV prevalence rate of 37% for women who use drugs is very close to the 36% recorded in another study for the Tshwane area. It is, however, higher than the prevalence of 26% recorded across three metropolitan areas in South Africa.(18) In the syndemic context of HIV and opioid use, awareness of HIV status was positively associated with retention. The risk of HIV, akin to pregnancy, may have heightened health consciousness, leading them to take steps towards enrolling in OST. This may reflect the importance of comprehensive care in harm reduction that addresses individual needs and promotes coordinated care for those living with HIV.(45)

While the study primarily examined women, it does confirm that higher doses of methadone facilitate retention on OST.(23) Further exploration is warranted to understand the impact of accumulated months on OST for women with treatment interruptions. Considering both attempt frequency and continuous use rather than solely six-month retention prompts a nuanced investigation into the dynamics of treatment interruptions and re-initiations on overall OST outcomes for women. In assessing the clinical effectiveness of OST for maintenance, methadone (60-100mg daily) provides better retention than buprenorphine (8-16mg daily) and both medications are safe and recommended during pregnancy.(46,47) In lower to middle income countries, methadone is more commonly consumed than buprenorphine, potentially due to the higher cost of agonist medications. In South Africa, for example, the cost of a 100ml bottle of methadone 10mg/ml solution ranges from US\$22-32 (equivalent to US\$1-2 per standard minimum dose of 60mg), while for buprenorphine 2mg tablets, it ranges from US\$1.44-2.26 (equivalent to US\$6-9 per 8mg dose).(48)

#### **Implications for research and/or practice**

The findings signal the urgent need for comprehensive interventions targeting both the biological and psychosocial aspects of opioid disorders in WWUD, with a particular focus on pregnant women. Treatment programmes should prioritise sexual reproductive health and rights of WWUD. Enhanced engagement and follow-up strategies are essential to reduce loss to follow-up rates. Additionally

addressing IPV, risks of communicable diseases and poly-drug use is crucial based on findings; suggesting further research explores these complex interactions.

To achieve better treatment outcomes and enhance overall well-being, collaborative efforts and further research, particularly qualitative studies, are required to address stigma, assess strategies for economic empowerment, ensure comprehensive healthcare services, and develop targeted approaches to address the intricate dynamics between substance use, IPV, and communicable diseases.

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### **Ethical considerations**

This study falls under a larger study covered in general terms by the COSUP research protocol approved by the University of Pretoria: Researching the Development, Application and Implementation of COSUP. Ethics Protocol No. 83/2017. Participants were not compensated and there was no risk as this study made use of secondary data. The consent forms signed by service users when enrolling for COSUP were considered valid for this study. Data was stored in password-protected files that are only accessible to the research team.

### **Competing interests**

The authors declare that there are no competing interests that exist.

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