


# Socio-Demographic and Clinical Aspects of Dropouts from CEPIAD's Methadone Program between January 2015 and December 2020

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## Abstract

**Context:** Launched on 27 January 2015, CEPIAD's methadone program, the first in West Africa, has seen a gradual ramp-up. However, despite the success of the first 2 years with massive inclusions, withdrawals from the program have been noted. This situation raised questions within the CEPIAD team, which decided to carry out this study. **Objective:** The aim of this work is to understand the reasons for discontinuation in order to adapt treatment strategies and improve patient retention in the program. **Methodology:** We conducted a retrospective descriptive study including patients enrolled in the methadone program who stopped between January 2015 and December 2020. Data were entered in Excel and analyzed using R software version 4.2.2. **Results:** The study involved a population with a mean age of 47.5 years, with participants aged between 19 and 75 years. The majority of patients were men (89.2%), while women accounted for 10.8%. Education levels varied: 8.3% of patients had no formal education, 36.6% had primary education, 16.7% secondary education and 14.2% higher education. Marital profiles were also diverse, with 22.5% single, 30.8% married, 37.5% divorced and 5% widowed. In terms of accessibility, 46.6% of patients lived close to CEPIAD, while 32.5% lived further away, increasing distance-related constraints. Of the patients, 69.2% lived in the suburbs of Dakar, while 21.7% lived in the city of Dakar. A history of incarceration was common, affecting 52.5% of patients. Clinically, 94.2% of patients were severely addicted to opioids, while 1.7% were moderately or mildly addicted. Initial methadone doses were mainly between 20 and 40 mg (86.5%), with varying titration: 49% received a maintenance dose of less

than 60 mg, which may have contributed to dropout. Average follow-up was 21 months. Mental co-morbidities affected 8.3% of patients, while physical co-morbidities included HIV (4.8%), HCV (7.8%), HBV (2.4%) and tuberculosis (4%). In addition, 95% of urine tests were positive, with a high incidence of multiple use of substances such as tobacco (75%), cannabis (15%) and alcohol (5%). Methadone side effects, mainly constipation (28%), abdominal pain (3.3%) and hypersudation (1.7%), were also identified as factors influencing the methadone discontinuation rate. **Conclusion:** The results of this study highlight the complexity of methadone substitution treatment, and the need for an individualised approach incorporating socio-demographic and clinical specificities to improve retention in the program. The data suggest the importance of dose adjustment, side-effect management and psychosocial support in reducing dropout.

### Keywords

Dropout, Methadone Program, Retention, CEPIAD, Addiction Management, Opioid Addiction

## 1. Introduction

Methadone is an analgesic opioid synthesized in 1937 by the Germans Max Bockmühl (en) and Gustav Ehrhart. Among other uses, it has been used since 1960 as an opiate substitute for heroin users, at the instigation of Mary Jeanne Kreek, Vincent Dole and Marie Nyswander [1] [2].

One of its major benefits is its ability to reduce withdrawal symptoms and cravings in individuals with opioid use disorder, thereby supporting recovery and decreasing the risk of relapse. It also has a long half-life, allowing for once-daily dosing, which can improve adherence. However, the methadone has significant drawbacks, including the potential for respiratory depression, especially during the initial titration period, and its complex metabolism, which can interact with other medications. Additionally, it can cause QT interval prolongation, increasing the risk of cardiac arrhythmia. Its use is tightly regulated, often requiring daily visits to specialized clinics, which may pose logistical challenges for patients.

The aim of the medication is to replace the use of opiates that produce euphoric effects (**heroin, morphine and certain analgesics**) and to help patients stabilize their cravings. In conjunction with medical and social care as part of a cure for withdrawal from illicit opiates, methadone treatment aims to stabilize the patient's addiction and reduce the risks of illicit drug use. The aim of this medical treatment is to reduce both the risks to the user directly inherent in drug use (**risks associated with injecting substances intravenously or taking them nasally, in particular the risk of contamination by HIV and hepatitis C, or inhalation and the risk of overdose**) and the risks to society associated with the illegal activities carried out to obtain heroin (**dealing, prostitution**).

In Senegal, the Centre de Prise en charge Intégrée des Addictions de Dakar (CEPIAD) cares for people with opioid use disorders and addictions, where an OST program has been set up.

The Centre de Prise en Charge Intégrée des Addictions de Dakar (CEPIAD) was inaugurated on December 1, 2014, by Senegal's Minister of Health, Professor Awa Marie Coll Seck. It stands as the first publicly funded opioid substitution treatment (OST) center in West Africa. Established in response to a 2011 survey revealing approximately 1324 injecting drug users in Dakar and highlighting their heightened vulnerability to HIV and hepatitis infections, CEPIAD offers comprehensive outpatient care for individuals dependent on psychoactive substances. Its services encompass methadone substitution therapy, harm reduction initiatives such as needle exchange programs, HIV and hepatitis testing and treatment, psychosocial support, and activities aimed at social reintegration [3]. By 2017, CEPIAD had treated 1091 patients, with 241 enrolled in the methadone program. The center's multifaceted approach has been pivotal in reducing the prevalence of HIV among injecting drug users, which was reported at 9.4% in 2011. CEPIAD's establishment and ongoing efforts have positioned Senegal as a leader in harm reduction strategies within the region [4] [5].

While methadone treatment is an effective treatment for opioid dependence, many patients stop it prematurely. It is, therefore, important to understand the reasons for discontinuation to improve patient retention in the program.

The main objective of our study will, therefore, be to understand the reasons why patients stop methadone treatment: identifying the reasons for stopping methadone can help to understand the individual, psychosocial, environmental and cultural factors that influence the decision to stop treatment. This understanding can enable clinicians and healthcare professionals to better adapt their practice to meet the individual needs of each patient, thereby improving patient retention in the program.

## 2. Methodology

- **Scope of the study:**

CEPIAD is helping to implement Senegal's Strategic Plan to combat AIDS 2013-2017 and its adaptation to the Global Fund's New Financing Model for the period 2014-2017, which aims to reduce new infections and improve the quality of life of people living with HIV, as well as those most at risk, including injecting drug users [4].

CEPIAD's fundamental aim is to provide integrated outpatient care for people addicted to psychoactive substances, while respecting human rights.

- **Type of study:**

This is a descriptive, retrospective study covering the period from January 2015 to December 2020.

- **Study population:**

Inclusion criteria required participants to be adults (aged 18 and over) included

in the CEPIAD methadone program between 2015 and 2020 before stopping.

- **Study method:**

A data collection form was drawn up (appendix) based on the objectives of the study. It was used to collect information on:

- ✓ Socio-demographic characteristics: age, gender, nationality, address, level of education, occupation, marital status, housing situation, geographical proximity to CEPIAD, previous incarceration.
- ✓ Clinical characteristics: type of addiction, main drug used, frequency of follow-up visits, initial dose of methadone, maintenance dose, urine tests, side effects, duration of follow-up, reason for stopping.

The records of patients included in the methadone program were analyzed.

- **Data entry and analysis:**

The data was entered and the graphs produced using EXCEL version 2016.

The data were analyzed using R software version 4.2.2.

During data collection, some participants provided incomplete responses or were lost to follow-up, leading to missing data in several variables. For quantitative variables with limited missing values, mean or median imputation was used depending on the distribution of the data. In cases where entire datasets from a participant were missing those entries were excluded from the final analysis.

The presence of missing data may have introduced bias. This could result in an underestimation of some factors associated with dropout, such as social instability or psychiatric comorbidities. Additionally, imputation methods, while helpful in preserving sample size, can reduce variability and may obscure true associations in the data. These limitations were acknowledged and considered when interpreting the findings.

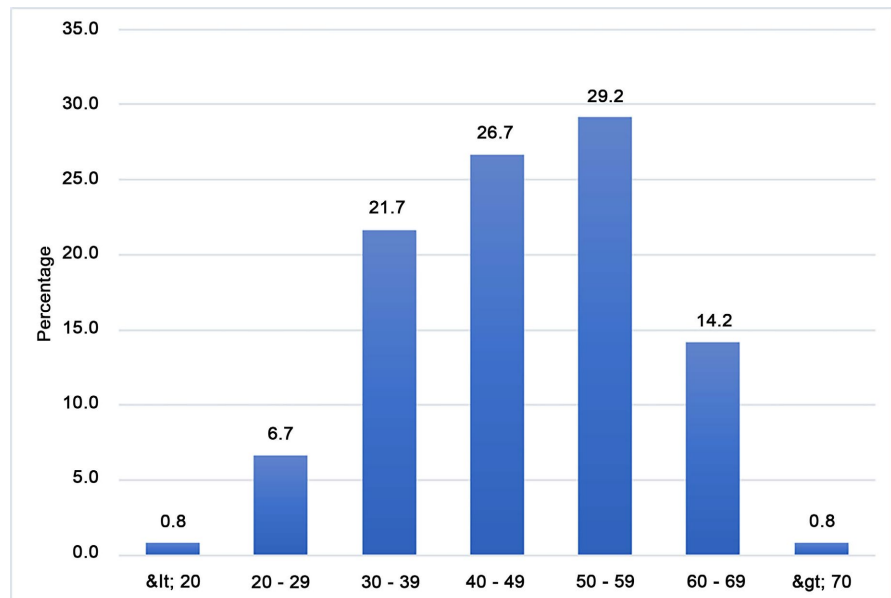
- **Ethical considerations:**

Authorization from the head of CEPIAD enabled us to carry out this study. The data was collected anonymously and kept confidential, *i.e.* only those in charge of the study would have access to it.

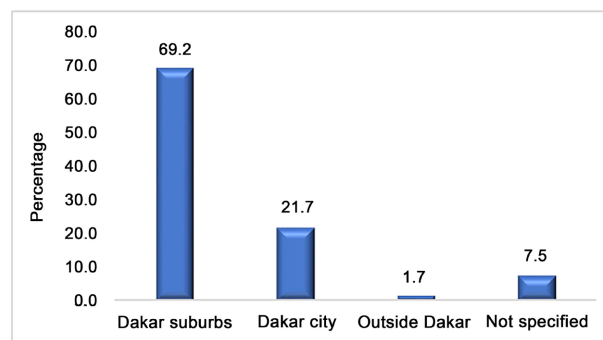
### 3. Results

- **Socio-demographic characteristics:**

- The mean age of our study population was  $47.3 \pm 12$  years, with extremes ranging from 19 to 75 years. Most of the patients in our study were between 50 and 59 years of age (**Figure 1**), *i.e.* 29.2% of cases (**Figure 1**).
- Analysis of the gender breakdown of our study population reveals a clear male predominance, with 107 men and 13 women, giving a sex ratio of 8.2.
- The breakdown of the population according to their marital status showed that many patients were divorced, *i.e.* 37.5% ( $N = 45$ ), 30.8% were married and 22.5% of cases were single, while 5% of our patients were widowed.
- Analysis of data relating to the address of our patients revealed that 69.2% of them came from the suburbs of Dakar, while 21.7% of cases lived in Dakar City and 1.7% of patients were from outside Dakar (**Figure 2**).



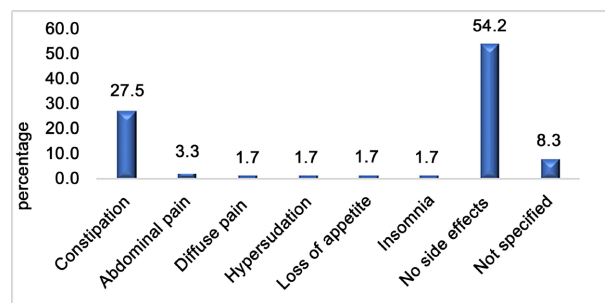
**Figure 1.** Breakdown of patients by group.



**Figure 2.** Breakdown of patients by address.

- The study of income-generating activity revealed that 69.2% of the cohort studied were in employment, *i.e.* working either in a public/private company or in the informal sector, while 25.8% were unemployed and had no activity.
- Many patients received primary education (36.7% of cases), 14.2% of our population had higher education and 8.3% of participants had received no education at all.
- Analysis of the geographical proximity of CEPIAD revealed that 46.6% of our population were close to the center, while 32.5% of cases were far from it.
- Sixty-three (63) patients in our population had a history of incarceration, *i.e.* a proportion of 52.5%.
- **Addictive behavior:**
  - Our research showed that heroin was the drug used initially before inclusion in the methadone program (92.5%), 2 patients used non-prescribed methadone and 1 used Subutex.
  - Many patients, 94.2%, were severely addicted.
- **Characteristics of methadone treatment:**

- Much of our population (86.5%) received an initial daily dose of methadone of between 16 and 40 mg/day, 5% of cases received between 41 and 70 mg/day and 3.3% of patients received between 10 and 15 mg/day.
- Forty per cent (40%) of our patients were receiving a methadone maintenance dose of between 30 and 50 mg/day, 25% were receiving between 50 and 70 mg/day, 14.2% were receiving a dose of between 70 and 90 mg/day and 5% were receiving between 90 and 100 mg/day.
- Methadone is the main MSO used at CEPIAD. However, it is associated with various adverse effects reported by 37.5% of our patients. Of all the side effects reported, constipation and abdominal pain were the most frequent. However, other effects such as insomnia, hypersudation and lack of appetite were rarely mentioned by patients (Figure 3).



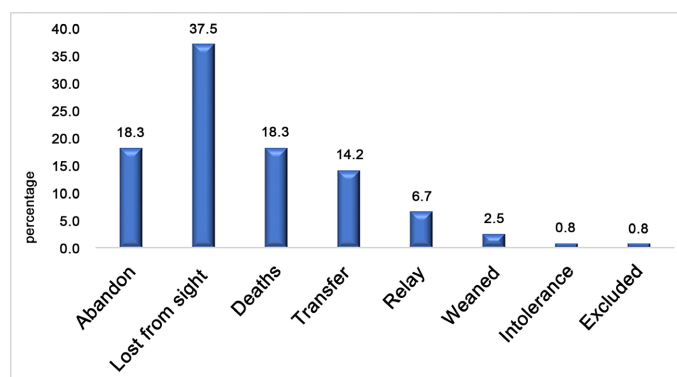
**Figure 3.** Undesirable effects experienced during OST.

- Our study revealed that many patients (96%) were poly-drug users, simultaneously using other substances in addition to heroin and methadone, including certain narcotics. Tobacco was used by 75% of the participants, cannabis by 57.4%, benzodiazepines by 30%, crack by 17.4%, and alcohol and cocaine by 16% of cases respectively.
- An analysis of the reasons for discontinuation of the methadone program revealed that the majority of patients (37.5%) had been lost to follow-up, 18.3% of cases had dropped out of the program, 14.2% had been transferred, 6.7% of cases were enrolled in the program for a relay and 2.5% of patients had weaned. However, 18.3% of cases had died (Figure 4).

#### 4. Discussion

Although the reasons for the gender differences in our study are unclear, an American study of people with opioid use disorder attending methadone programs in Baltimore found that men scored lower on the treatment readiness scale [6]. Consistent with other retrospective studies, according to O'Connor *et al.* [7], although there is conflicting evidence regarding the influence of gender on retention, when an association is observed, most studies identify males as being at higher risk of discontinuation.

The age distribution of our population showed an average age of 47.5 years [19.0 years, 75.0 years]. This result reinforces what was found in a study carried



**Figure 4.** Breakdown of the population by reason for stopping.

out in several clinics in China, which showed that demographic factors, including age, can influence patient retention in OST programs such as methadone. Older patients were more likely to drop out of or re-enrol several times in OST programs [7].

The 25.8% unemployment rate observed in our study population may have a significant impact on patient retention in the methadone program at CEPIAD. Studies show that socio-economic factors, such as unemployment, play a crucial role in patient retention in addiction treatment programs. For example, research by McGovern *et al.* (2006) found that patients suffering from economic insecurity were more likely to drop out of treatment due to difficulties in financing travel, medical consultations and medication [8].

Even though 46.6% of our study population live close to CEPIAD, many patients end up stopping the methadone program. One potential reason for this could be the fact that some patients provide false information when they are admitted to the program. This can happen for a variety of reasons, including a desire to benefit from treatment without any real intention of embarking on a full rehabilitation process.

Studies show that transparency in the information provided is essential for the personalization of treatment and the success of the program. For example, an article by Gossop *et al.* (2003) found that patients who withheld crucial information about their substance use were more likely to encounter difficulties in their treatment journey and to drop out of the program [9].

Our study found that 49% of patients included in the sample were receiving a maintenance dose of less than 60 mg/day. Studies have consistently shown that daily doses of methadone in the recommended range of 60 - 120 mg/day are protective, reducing the risk of dropout [3] [7] [10]-[12]. Although no studies to date have examined the reasons for persistence of low methadone dosing in several studies, Cao *et al.* [10] suggest that clients may be reluctant to accept higher doses due to increased side effects, a desire not to stop illicit drug use, social pressures from other drug users or dissatisfaction with treatment services.

The results of our study indicate that 8.3% of the population had a psychiatric disorder (anxiety disorder, depression, personality disorders), which is closely linked

to dropping out of the methadone program, because of its impact on motivation, perception of reality and ability to manage the challenges associated with addiction. According to one study, a higher number of psychiatric comorbidities was associated with an increased drop-out rate. This is consistent with the findings of a previous study involving a cohort of individuals participating in OST in primary care [11] as well as other cohorts of individuals in OST [13].

Our analyses showed that 14.2% of our study population had a particular medical condition: in particular tuberculosis, hepatitis C and HIV. Individuals co-infected with these diseases may experience health complications that make monitoring and engagement in the methadone program more difficult.

❖ Limitations of the study:

Nevertheless, we acknowledged several limitations of our study:

The study could be influenced by selection bias, as it only considers patients who have already taken part in the program, thus excluding those who have never done so.

As the study was retrospective, the data was incomplete or missing, which may affect the validity of the results. Medical records may not contain all the necessary information on socio-demographic or clinical factors.

As the data is collected retrospectively, it may be difficult to establish the chronological order of events, making it more difficult to interpret the relationships between socio-demographic and clinical factors and dropping out.

The results of the study may not be generalizable to other populations or contexts, in particular due to the specificities of the population studied at CEPIAD.

## 5. Conclusion

These results highlight a number of major challenges in retaining patients on the methadone program. It is, therefore, imperative to develop targeted intervention strategies, including personalized monitoring and optimization of methadone doses, while offering additional support for patients with psychiatric or legal histories. These efforts could significantly improve program retention and, consequently, therapeutic outcomes.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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