

Introduction of methadone maintenance treatment at the Abidjan Centre for Addiction and Care: Profile of service users, treatment outcomes and challenges after 4 years of operation

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Abstract

Introduction: Access to treatment for disorders related to the abuse of psychoactive substances is a global public health priority. In 2021, the *Centre for Addiction Support and Care in Abidjan (CASA)* was created to address the issue of care provision through an integrated approach combining opioid substitution therapy. The aim of the study was to determine the epidemiological profile and describe the treatment outcomes of drug users seeking care at CASA.

Methods: A descriptive cross-sectional study was conducted over a four-year period from 2021 to 2024. Using a structured questionnaire, sociodemographic characteristics, consumption patterns, and clinical and therapeutic outcomes were collected. The data were analyzed using EpiInfo version 7.2.5.

Results: Those receiving methadone treatment were young adults (40 ± 10.33 years), predominantly male (61.1%), living in precarious circumstances with a daily income of less than 2 USD (58.3 per cent). They had co-morbidities (66.6%), such as HIV (33.3%), HCV (33.3%), and tuberculosis (25%). They were poly-drug users (100%) who had experienced relapses (83.3%), mainly linked to a disruption in the supply of substitution treatment (60%). Treatment outcomes were generally favorable, with 73.3% in the recovery phase.

Conclusion: Our study presents a profile of drug users seeking treatment who were in vulnerable situations and have a high prevalence of communicable diseases. Whilst the effectiveness of methadone maintenance treatment is well established, ensuring its effective availability remains a major challenge for those seeking treatment at CASA.

Keywords: People who use drugs, Opioids substitution treatment, Methadone, Epidemiological profile,

Introduction

Psychoactive substances of abuse (PSA), commonly referred to as 'drugs of abuse', refer to any substance (whether legal, illegal or a misused medicine) whose use is likely to alter consciousness, cause cognitive impairment and affect behavior [1]. They can be natural or synthetic [2]. Among these substances, opioids are a group of particular concern due to the severity of the health and social harms associated with them [2]. Problematic opioid use is indeed linked to an increase in risky sexual behavior and greater vulnerability to infections such as HIV and excess mortality [1,3]. The fight against the misuse of psychoactive substances and the care of people with substance use disorders (SUD) are among the international public health priorities, as reflected in Target 5 of Goal 3 of the

2030 Sustainable Development Goals (SDGs). It aims to strengthen prevention and access to treatment for disorders related to drug of abuse and alcohol use [4].

As in other countries in West Africa, the number of drug users is on the rise in Côte d'Ivoire [5]. In Abidjan alone, there are estimated to be around 10,000 people who use drugs (PWUDs) [6], with heroin being the second most used substance among those seeking treatment, after cannabis [2,7].

Opioids substitution treatment (OST), which has been in use since the 1960s [8,9], has proven effective in reducing heroin use, reducing the use of other drugs, crime, the transmission of HIV and hepatitis, and in improving the social and economic stability of people suffering from addiction [3]. However, prevention and care strategies will be more effective if the profile of drug users is known, the outcomes of treatment received are properly analyzed, and limitations in care services are clearly identified.

Access to OST remains very limited, particularly in Africa, where fewer than one in five people in need of treatment receive it [3,7].

It was against this backdrop that the Abidjan Centre for Addiction Support and Care (CASA) was established in 2018, the first Ivorian organization to provide free addiction treatment based on an integrated harm reduction approach, or 'one-stop shop'. Since 2021, CASA has also been providing opioid substitution therapy, making it a pilot scheme in Côte d'Ivoire.

After four years of implementing the scheme, it seems appropriate to document CASA's experience of providing comprehensive care for OST beneficiaries.

We made the hypothesis that the recent integrated harm reduction approach associating OST with methadone implemented in CASA since 2021 improves the management and outcomes of drug users included in the program.

The overall aim of this study was to review the management of drug users seeking opioids substitution therapy at the Abidjan Centre for Addiction Support and Care. More specifically, the aim was to 1) identify the socio-demographic characteristics of patients receiving OST, 2) describe their substance use patterns, 4) report the treatment outcomes, and 4) discuss challenges encountered during the implementation of the program.

Methods

Scope of the study

This study was carried out at the Abidjan Centre for Addiction Support and Care (CASA). It was established through collaboration between the NGOs 'Espace Confiance' and 'Médecins du Monde', and operates under the supervision of the Ministry of Health. It is a specialized outpatient care center that applies an integrated harm reduction approach. CASA is a leading healthcare facility for substitution treatment in Côte d'Ivoire. Between January and November 2024, the Centre recorded 994 admissions who received at least one care service. During the data collection period, 105 people seeking care were registered.

Type and period of study

This was a retrospective and prospective cross-sectional study with a descriptive aim, which took place from November 1st to 29th, 2024, using data collected from January 1st, 2021 to November 29th, 2024.

Study population

The study focused on drug users receiving opioid substitution treatment (OST) initiated and monitored at CASA between 2021 and 2024. Recipients of the OST program were selected by the administrators among those who regularly attended the Centre. In addition, the following prioritization criteria were applied:

- Be aged 18 or over
- Live near the Centre so that you can take your medication every day
- Being a heroin user
- Injecting drugs
- Be a female
- Be pregnant
- Having a co-morbidity: HIV, hepatitis B or C, psychiatric disorders

From among the OST recipients during the study period, we selected the subjects according to the following criteria:

- Inclusion criteria: adult patients, regardless of gender, receiving hormone replacement therapy and who were seen and monitored at CASA during the study period
- Exclusion criteria: patients who discontinued treatment or whose medical records were incomplete (no data on drug consumption).

Data collection and analysis

The data were collected from patient records using a questionnaire designed for this purpose and validated in collaboration with an addiction specialist and the doctor responsible for patient care at CASA. The variables extracted from the patient records were divided into three categories:

- Patient profile: age, gender, level of education, occupation, marital status, living conditions, daily income, criminal record, associated comorbidities
- Substances use profile: age at onset, duration of use, substances used, the concept of poly-substance use, patterns of use
- Description of treatment: who initiates treatment, treatment regimens, adverse effects and treatment outcomes (relapse, recovery, stabilization).

The data were entered using Excel 2013 and analyzed using EPI Info 7.2.5. The descriptive analysis of patient characteristics, substances used and treatment was presented as proportions for qualitative variables and as means with standard deviations for quantitative variables.

Ethical considerations

The protocol was approved by the Ethics Committee of the Department of Public Health Studies and Research at the Faculty of Pharmaceutical and Biological Sciences.

The study began once the protocol had been approved and authorization had been obtained from the coordinator of the NGO Espace Confiance. No link could be established between the case file and the patient, thereby ensuring the anonymity and confidentiality of the data.

Results

During the study period, 18 care-services users received opioid substitution therapy (OST) and had a complete medical record. One (01) service user was not included, as he had started treatment in another country before discontinuing the treatment initiated at CASA in 2024.

Sociodemographic and economic characteristics

The sample consisted mainly of men, with a *sex ratio* of 1.57, and the average age was 40.05 ± 10.33 years. The majority of those

seeking care were single (61.1%) and had completed secondary education (55.5%). Half of these service users were unemployed and 58% were living on an income of less than 1,000 FCFA per day (approximately 2\$USD). Nearly 39% were homeless and 27.8% had a history of criminal convictions. Furthermore, two in three patients were living with HIV, hepatitis C and/or tuberculosis (**Table 1**).

Patterns of psychoactive substance use

The average age at which drug use began was 17.94 ± 5.78 years, and 70.6% had started using drugs before the age of 19 (range =

Table 1. Sociodemographic and clinical characteristics of people who use drugs seeking opioid substitution treatment at CASA.

Characteristics of patients	Number (n)	Proportion (%)
Sex		
- Men	11	61.1
- Women	7	38.9
Age (years)		
Mean $\pm$ standard deviation (40.05 ± 10.33)		
- Under 35	2	11.1
- Over 35	16	88.9
Marital status		
- Single	11	61.1
- Cohabitation	4	22.2
- Divorced	1	5.6
- Married	2	11.1
School year		
- Never attended school	2	11.1
- Primary	3	16.7
- Secondary	10	55.5
- University	3	16.7
Professional experience		
- Unemployed	9	50.0
- Informal sector	5	27.8
- Private sector	3	16.7
- Public sector	1	5.5
Daily income (USD)		
- Under 2	7	58.3
- Between 2 and 10	3	25.0
- More than 10	2	16.7
Living conditions		
- Homeless	7	38.9
- Live alone	5	27.8
- With the family	6	33.3
Criminal record		
- Yes	5	27.8
- No	13	72.2
Associated comorbidities		
- Malnutrition	1	8.3
- Sickle cell anemia	1	8.3
- Psychiatric disorders	2	16.7
- Tuberculosis	3	25.0
- Hepatitis B	4	33.3
- Hepatitis C	1	8.3
- HIV	4	33.3

10 years). The average duration of use was 23.11 ± 5.8 years at the time of the study. Poly-substance use was common amongst 100% of drug users, and approximately 39% of users were using four substances simultaneously. The most used substances were cannabis and heroin in equal proportions (83%). Smoking or inhalation was the method of use for 51.8% of users, whilst 24.1% of them injected drugs (Table 2).

Description of the care provided and treatment outcomes

All patients on OST had received psychological support and, in 33.3% of cases, symptomatic treatment for insomnia, polyarthralgia, rhinorrhea or nausea. Methadone, an opioid receptor agonist, was the only drug available for opioid substitution therapy at CASA. Methadone hydrochloride 1 mg/ml oral solution sugar free 30 mL flask was administrated under the strict supervision of a Medical Docteur in charge of PWUD seeking care services from CASA. The starting dose was set at 30 mg and gradually increased by 5 or 10 mg every 72 hours depending on the intensity of the withdrawal symptoms, clinical assessment, and the patient's history. Then, a maintenance dose determined by the Addiction specialist was given to suppress withdrawal in individual patients, without ever exceeding 60 mg.

Insomnia was the most frequently reported side effect, affecting 50% of patients. Relapse (temporary resumption of use) was reported by 83% of patients, and the main reason for relapse was a disruption in OST (60%). Regarding treatment outcomes, at the end of the study, 72.3% (n = 13) were in the recovery phase, 5.5% (n = 1) were in the stabilization phase and 22.2% (n = 4) had relapsed (Table 3).

Discussion

To address existing gaps in the care provided to people who use hard drugs in Côte d'Ivoire, particularly heroin, CASA introduced a care program in 2021 that includes opioid substitution therapy (OST) as part of an integrated approach for harm reduction.

The socio-demographic characteristics of OST recipients revealed a pattern that identified them as adults with an average age of 40 (aged 18–61), male (61%), single (61%), unemployed (50%) and having attended school (89%). In a study carried out among heroin users in Johannesburg, Morgan et al. found that participants were aged between 18 and 47, with an average age of 27 [10]. Similarly, in Nigeria, Okonkwo et al. found patients aged between 19 and 66 years, with a mean age of 29.59 ± 9.19 years, in their study [11]. The participants in our study were older on average because the

Table 2. Patterns of psychoactive substance use among drug users seeking opioid substitution treatment at CASA.

Characteristics of drug consumption	Number (n)	Proportion (%)
Age at onset of substances use (years)		
- 10 to 14	6	35.3
- 15 to 19	6	35.3
- 20 to 24	2	11.7
- 25 to 29	2	11.7
- 30 to 35	1	5.9
Duration of substances use (years)		
- 0 to 9	2	11.7
- 10 to 19	2	11.7
- 20 to 29	8	47.2
- 30 to 40	5	29.4
Number of substances used		
- 3	6	33.3
- 4	7	38.9
- 5 and over	5	27.8
Type of substances used		
- Tramadol	5	27.8
- Morphine	4	22.2
- Crack	7	38.9
- Cocaine	9	50.0
- Heroin	15	83.3
- Cannabis	15	83.3
- Tobacco	13	72.2
- Alcohol	7	38.9
Consumption pattern		
- Inhaled/smoked	15	83.3
- Ingested	7	38.9
- Injected (syringe)	7	38.9

Table 3. Characteristics of the treatments provided to drug users seeking opioid substitution treatment at CASA.

Characteristics of the treatment	Number (n)	Proportion (%)
Type of treatment		
- OST*	18	100
- Symptomatic treatment	6	33.3
- Psychological support	18	100
Side effects of the treatment		
- Runny nose	2	11.1
- Nausea	2	11.1
- Shivers	4	22.2
- Polyarthralgia	5	2.8
- Insomnia	9	50.0
- Watery eyes	4	22.2
- Yawn	9	50.0
Occurrence of relapses		
- Yes	15	83.3
- No	3	16.7
Reasons for relapses		
- Withdrawal syndrome	3	20.0
- Craving	3	20.0
- Back with the family	1	6.7
- Imprisonment	1	6.7
- Travel	1	6.7
- OST disruption*	9	60.0
Outcomes of the treatment		
- Recovery	13	72.3
- Stabilisation	1	5.5
- Relapse	4	22.2

* OST: Opioid Substitution Therapy

time elapsed between the onset of the consumption and the start of treatment was long – 23.11 years on average. This delay can be explained by the fact that substitution treatment is very recent in Cote d'Ivoire, having been introduced less than five years ago. Women accounted for a small proportion of those receiving treatment in our study, which is consistent with several similar studies carried out by various authors [8–10]. It is well established in the literature that women who use drugs tend to progress more rapidly than men towards substance use disorders (SUDs). However, they are still under-represented when it comes to access to treatment for substance misuse [11]. In our socio-cultural context, we observe that women who use substances are often face prejudice, social and health service stigma particularly among sex workers [3,12].

Half of the service users were unemployed (50%); the rest were workers in the informal sector (27.77%), the private sector (16.66 %) and the public sector (5.55%). Trends in the sub-region were similar. A study carried out in Burkina Faso by Thiombiano in 2023 at a centre with a mission similar to that of the CASA had identified a population of healthcare seekers comprising workers in the informal sector (40.52%), pupils and students (31.03%), traders (14.65%), and the unemployed (13.08%) [15]. In Togo, the 2015–2019 epidemiological survey on psychoactive substance use, which covered 2,516 people who use drugs (PWUD), reported that 31.9 % were unemployed, 31.7% were in education and 29.8% were

in employment [16]. These figures reflect the diversity of PWUD profiles within the population. No social group is spared. However, young people and the unemployed must be the priority targets of prevention strategies, as they are the group most at risk.

The presence of comorbidities among the service users in our study was confirmed in 67% of them. These included HIV (36%), viral hepatitis (36%), tuberculosis (25%), and mental health conditions (17%). A study involving 532 PWUD (specifically heroin and cocaine users) in Abidjan in 2018 revealed a prevalence of active pulmonary tuberculosis of 9.8% and 5.6% for HIV [17]. Prevalence rates remain very high in this specific population, whilst they are falling in the general population, where the prevalence of HIV stands at 1.8% and that of tuberculosis at 0.1% [18].

Our figure can be explained by the high level of vulnerability faced by CASA service users, but above all by the significant prevalence of people who inject drugs (PWID) in our sample. However, any form of drug use, regardless of the method, exposes the user to risky behaviors (sharing of drug-use equipment, risky sexual behavior) that may lead to health problems.

People generally started experimenting with recreational drugs as early as pre-adolescence (aged 10). In our study, heroin use (83.33%) and cannabis use (83.33%) were the most common, followed by cocaine (50%) and crack (38.89%). In West Africa,

cannabis remains the leading substance associated with demand for treatment, followed by alcohol and then heroin [11]. Our findings are comparable to those of Traoré in 2024, who reported that heroin (89.10%), cocaine (52.72%), and crack (34.54%) were the main drugs used by children in conflict with the law known as “microbes” [19]. These hard drugs are becoming increasingly accessible as they are available in smoking dens and from street drug dealers in Abidjan [19]. These substances were mainly consumed by smoking or inhalation (51.72%), whilst 24.14% of users injected them. Our findings are supported by those of Morgan et al. in South Africa, who found that 29.7% were PWID in their sample of heroin addicts undergoing rehabilitation between 2017 and 2019 [10]. Lassmann estimated that 16.66% of the patients at CEPIAD in Senegal were PWID in 2015 [12]. By contrast, the prevalence of injecting drug use reported in a collaborative study in West Africa was relatively low, at less than 6% [3]. It should be noted that at CASA, injecting drug use was a criterion used to prioritize patients for substitution treatment, which explains the high proportion of people who inject drugs (PWID) in our study. The sharing of injection or inhalation equipment increases the risk of transmission and infection from blood-borne infections, such as HIV and hepatitis viruses, and invasive airborne bacterial infections such as tuberculosis, as reported by several authors [18,20–22].

One or more relapses were observed in 83.33% of care users. Our results were like those reported by Morgan in South Africa, with a relapse prevalence of 93.7% [10]. Okonkwo and colleagues found a lower relapse rate of 51.3% in Nigeria [11]. The difference in study populations could explain the discrepancies in the figures. Indeed, Okonkwo’s study focused on users of all types of drugs, whereas Morgan et al., like our study, focused on users undergoing substitution treatment. The latter were therefore using hard drugs, which are more difficult to give up. Relapse is a common occurrence in the recovery process for substance use disorders. Substitution treatment alone is not sufficient; psychosocial support and rehabilitation are just as important.

The reasons given by users to explain their relapses were, first and foremost, discontinuation of opioid substitution therapy (60%), followed by ‘craving’ (20%) and withdrawal symptoms (20%). In the literature, an early age of onset of drug use, a lack of follow-up after detoxification, easy access to drugs, limited access to services, and poor family and social support were associated with relapse [23,24]. Data from a systematic review including four African countries (South Africa, Uganda, Zambia and Democratic Republic of Congo), showed a relapse rate ranging from 23 to 92% with predictors including low recovery capital and poor social support [25].

Given the number of visitors to the Centre during the study period (n = 105), there are far more service users in need of OST than those receiving it (17%). The numerous criteria for prioritizing and selecting beneficiaries made methadone maintenance treatment inaccessible to some people seeking care, particularly those living far from the CASA. Despite this selection, a high rate of relapse attributable to the discontinuation of methadone – the only OST offered at the CASA and provided free of charge – was observed. This imbalance between supply and demand for methadone is a consequence of African countries’ dependence on foreign funding to procure opioid substitution therapy (OST). As in many healthcare sectors in sub-Saharan Africa, fluctuations in budgets

or changes in donors’ policy priorities undermine the sustainability of healthcare provision [26]. Furthermore, where programs rely on temporary grants, the transition to being funded exclusively from national budgets is hampered by the budgetary constraints of health ministries [27–29].

Strengths and Limits of the Study

This study was the first one to review the program performance of the unique Addiction Center offering comprehensive services for the reduction of harms targeting opioids users in Cote d’Ivoire. Methadone stock-outs have been identified as the main challenge in successful management of care seekers in CASA. However, we identified some limitations, notably the small sample size which prevent any generalization to the actual population of care services seekers. The prioritization criteria for admission in the CASA program have probably introduced a selection bias and conduct to the small sample size observed. This is a recurring bias in recent literature, which shows that a large proportion of published studies are based on small sample sizes [30,31]. Also, we did not introduce a comparison group (no substitution therapy) to assess the contribution of OST to recovery.

Conclusion

This study was conducted to verify if the integrated harm reduction approach associating methadone implemented in CASA since 2021 improves the management and outcomes of drug users included in the program. The goal was to review the critical points in the management of drug users seeking opioids substitution therapy in the CASA.

The patients who were able to receive opioid substitution treatment (OST) through the integrated approach for harm reduction at CASA were adults, the majority of whom were male and living in precarious circumstances. Poly-drug use was common, and the prevalence of HIV, hepatitis C and tuberculosis was very high among patients. In the four years following the introduction of integrated treatment combined with OMT at CASA, very few patients have been able to benefit from this treatment, which is recognized as being highly effective in the management of opioid addiction and in reducing other risks. This limited availability of OST treatment was mainly due to insufficient stocks of methadone during the observation period. National health strategies should prioritize the provision of methadone in opiates addiction treatment centers to ensure the transition from aid dependency to domestic sustainability.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Data Availability

Data supporting this research are available from authors on reasonable request.

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Authors’ Contribution

Study design: HIEN Aline and DIAKITE Aïssata

Data collection: HIEN Aline

Data interpretation: HIEN Aline and MELESS David

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Critical review of the manuscript: SANGARÉ Abou Dramane and MELESS David

All co-authors have read the entire manuscript and approved its content.

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