Substance use disorder and associated factors at an opioid de-addiction clinic in Western Kenya

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Abstract

Background: Opioid substitution therapy with methadone is at the heart of substance use disorder intervention at the Jaramogi Oginga Odinga Teaching and Referral Hospital's medication-assisted therapy (MAT) clinic (JOOTRH). However, little is known about the factors linked to substance use disorders and the substances used by clinic patients. The purpose of this study was to assess the factors associated with substance use disorders and the substances used by MAT-JOOTRH clinic patients.

Methods: Between November 2018 and May 2019, data from 61 patients were collected using questionnaires and summarised using descriptive statistics.

Results: Participants were mostly men (92%), between the ages of 31 and 40 (51%), married (48%), employed (71%), living with their nuclear family (49%), and had at least a primary school education (49%). Their average age was 32, 87% had used drugs for more than ten years, and 52% lived in an informal settlement. Cannabis (89%) and heroin (86.9%) were the most commonly used drugs. The main factors associated with first-time substance use were peer

pressure (67%), role models (66%), and the environment (46%). The main reasons for regular substance use were withdrawal symptoms (75%), enjoyment (71%), peer pressure (69%), and role models (66%). **Conclusions:** According to these findings, peer pressure and withdrawal symptoms may be the primary triggers of substance use disorders in the study area. Young male members of society, particularly those from informal settlements, appear to be the most vulnerable to substance use disorder. Future substance use disorder interventions in the study area should target young male members of society from informal settlements.

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1. Background

Substance use disorder is defined by the World Health Organization (WHO) as the use of harmful or hazardous psychoactive agents such as alcohol and illicit drugs [1]. When these substances are used repeatedly, they can cause dependence, which is characterized by physiological, cognitive, or behavioural abnormalities that lead to a strong desire for drug consumption, eventually leading to addiction [1]. Substance use disorder is associated with risky behaviour, which can have a negative impact on the health and socioeconomic well-being of those who engage in it [2]. Property destruction, poor social relationships, violence, risky sexual behaviour, and deviancy are some of the major areas of concern identified in victims of substance use disorders [2]. These social vices endanger families and communities [3]. Because of the implications for individuals' socioeconomic well-being as well as their health, substance use disorder is an important area of research [3].

According to a report released by the United Nations Office on Drugs and Crime (UNODC), it is estimated that between 3.5 and 7.0 percent of the world population aged 15-64, had used an illicit drug at least once in 2012 [3]. The majority of the drugs were opioids, cannabis, or amphetamines [3]. Opioids and opiates are blamed for the vast majority of drug and substance-related morbidity and mortality worldwide [3]. However, because substances have multiple uses, the estimates

are not mutually exclusive [4].

Opioid analgesics are commonly used to treat moderate to severe pain[5]. However, in recent years, the potential for overuse, misuse, and abuse has overshadowed the positive aspects of these agents [5]. According to a study on the global prevalence of opioid use, there are approximately 15.5 million opioid-dependent people worldwide [6]. Addiction to opioids has also been identified as a major contributor to the global disease burden [6].

The total cost of drug addiction has been largely driven by substance users' aggressive participation in social vices[7][8]. Between 2010 and 2050, the burden of mental and substance use disorders in Sub-Saharan Africa is expected to increase by 130% [9]. Furthermore, drug addiction is associated with 0.8% of all global cases of disability-adjusted life years (DALYs) [9][10]. Substitution therapy is one of several important treatments for opioid addiction[11][12]. Opioid substitution therapy options in various countries include buprenorphine plus naloxone, methadone, or medical heroin-assisted therapy (MHAT) [11][12][13].

Methadone substitution therapy was introduced in Kenya in December 2014, after two years of planning and much anticipation among potential patients [14]. It was implemented as part of policy initiatives aimed at preventing Human Immunodeficiency Virus (HIV) infection among substance users [15]. The methadone programme in Kenya is funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) and the United States Agency for International Development (USAID), with implementation assistance provided by the University of Maryland (USA) and the United Nations Office on Drugs and Crime (UNODC) [14]. The program's first phase was implemented through designated clinics in Nairobi and the Coast Province [14].

The MAT clinic at JOOTRH opened in 2017 and is Western Kenya's only opioid addiction treatment centre. However, the substances used by clinic patients and the risk factors for substance use disorders are unknown. Understanding the types of substances used by clinic patients, as well as the factors associated with substance use disorders, may help guide the development of long-term substance use intervention programmes in the region. The current study aims to identify the types of substances used and the factors that contribute to substance use disorders among JOOTRH's MAT clinic patients in Western Kenya.

2. Methods

2.1. Ethical considerations

Before beginning the study, the institutional research and ethics committee (JOOTRH-IREC) approved it (Reference number ERC. 1B/VOL.1/412). Adult patients over the age of 18, those attending a MAT clinic for substance use disorder treatment, and those able to give informed consent to participate were all eligible. Patients with an intellectual disability or active psychiatric disease that prevented them from giving informed consent, as well as those with other medical conditions that preclude methadone use, were not eligible to participate in the study. Participants in the study were taken through a consent explanation form, and only those who agreed to participate in the study were asked to sign the consent

form and then invited for a face-to-face interview. To maintain participant confidentiality, identifiers such as names were not included in the data collection forms. Each patient was also given a study number, and information on the patient's hospital number was initially recorded in the data collection tool in order to identify patients who had been interviewed and avoid replication. However, this information was not included in the final form that was used for data analysis.

2.2. Study site and design

This was a descriptive cross-sectional study that included a survey of all patients who visited the medication-assisted therapy clinic at JOOTRH between November 2018 and May 2019. JOOTRH was established to meet the health needs of workers in Kisumu's port town [16]. It currently serves as a referral hospital for more than 100 district and sub-district hospitals in more than ten counties in Western Kenya [16]. The hospital's mission is to provide curative, preventive, promotional, and rehabilitative health services [16]. JOOTRH's methadone clinic has been open since January 2017.

2.3. Questionnaire design and data collection protocol

The guidelines for developing and validating a questionnaire developed by Tsang and colleagues were used[17]. A previously validated survey (the WHO model core questionnaire on substance abuse) was identified via a literature search [18]. The WHO model core questionnaire has been standardized and used in countries throughout Africa, including Kenya [19][20]. However, this questionnaire was deemed insufficient, so a modified questionnaire was developed through a series of meetings held by an expert committee composed of an epidemiologist, two toxicologists, two clinical pharmacists, and two registered pharmacists. The questionnaire format (which included both open-ended and closed-ended questions) and length were determined by the committee. The questionnaire was divided into four sections: participants' socio-demographic data, information on opiate use, information on medication-assisted therapy, and factors influencing substance abuse use. Appendix I contains more information (supplementary information). A pilot with 8 participants (PEER educators; recovering addicts tasked with recruiting members into the methadone programme) was conducted to test the appropriateness of the questions.

2.4. Data handling and analysis

The data was coded and entered into a Microsoft Excel datasheet before being exported to the Statistical Package for the Social Sciences (SPSS) version 20.0 for analysis. Tables were created to summarize the results of descriptive statistical measures.

3. Results

The demographic characteristics of patients presenting to the opioid de-addiction clinic at the Jaramogi Oginga Odinga Teaching and Referral Hospital in Western Kenya are summarized in Table 1.

Table 1. Demographic characteristics of patients presenting to the Jaramogi Oginga Odinga Teaching and Referral Hospital's opioid de-addiction clinic

Demographic factor	Frequency (n=61)
Gender	
Male	56 (92%)
Female	5 (8%)
Age	
21-30	25 (41%)
31-40	31 (51%)
41-50	4 (7%)
>50	1 (2%)
Period of substance use (in years)	
1-4	4 (7%)
5-10	4 (7%)
>10	53 (87%)
Marital status	
Single	16 (26%)
Married	29 (48%)
Divorced	15 (25%)
Widowed	1 (2%)
Employment status	
Unemployed	18 (30%)
Self-employed (business)	16 (26%)
'Boda boda' rider	7 (12%)
Not disclosed	5 (8%)
Truck driver	2 (3%)
Manual laborer	2 (3%)
Salesperson	2 (3%)
Allied health worker	2 (3%)
Mechanic	2 (3%)
Tout	2 (3%)

Shop attendant	2 (3%)
Parastatal employee	1 (2%)
Living arrangement	
With nuclear family	30 (49%)
With extended family	7 (12%)
Inmate	2 (3%)
Alone	15 (25%)
With friends	7 (12%)
Highest level of education	
Illiterate	2 (3%)
Primary	30 (49%)
Secondary	17 (28%)
Tertiary	12 (20%)
Source of the substance (s) used	
Friend	32 (53%)
Purchase from pharmacy	2 (3%)
Vendor	27 (44%)
Estimated monthly expenditure on the substances used	
< 50, 000 KES ($461)	33 (54%)
50,000-100, 000 KES ($461-$921)	14 (23%)
>100, 000 KES (>$921)	14 (23%)
Place of residence	
Kisumu East	44 (72%)
Kisumu West	1 (2%)
Kisumu Central	14 (23%)
Vihiga	1 (2%)
Siaya	1 (2%)

Patients were predominantly male (56; 92%), between the ages of 31 and 40 (31; 51%), had used illicit substances for

more than ten years (53; 87%), were married (29; 48%), employed (43; 71%), lived with their nuclear family (30; 49%), had primary school as their highest level of education (30; 49%), primarily sourced illicit substances from friends (32; 53%), and spent $50,000 (KES; $461) per month on illicit drugs (Table 1). The average age of all patients was 32.4, and the majority (32; 52%) came from Kisumu East's informal settlements (Table 1).

Table S1 shows the average age of patients based on their location and level of education. Participants in the Manyatta area came from all educational levels (illiterate, primary, secondary, and tertiary) (Table S1). Patients with at least two levels of education were found in the Kaloleni and Rabuor areas. Patients presenting to JOOTRH's opioid de-addiction clinic were 32.4 years old on average. Kona Mbuta (21 years), Lumumba (22 years), Milimani (22 years), Ogango (24 years), and Kibos had the youngest patients (27 years). Migosi (36.5 years), Kisumu Town (37 years), Bondeni (39 years), and Mosque Estate (43 years) had the oldest patients (Table S1).

The frequency and routes of substance abuse among patients prior to the start of clinic-based interventions are summarized in Table 2. The most commonly abused substances were cannabis sativa, heroin, and benzodiazepines.

Table 2. Substances used and frequency of use among study participants prior to intervention at Jaramogi Oginga Odinga Teaching and Referral Hospital's opioid de-addiction clinic

Agent	Route and frequency of use			
	Inhalation	Injection	Oral	Smoking
Alcohol	0 (0%)	0 (0%)	4 (7%)	0 (0%)
Artane	0 (0%)	0 (0%)	2 (3%)	0 (0%)
Benzodiazepines	0 (0%)	1 (2%)	21 (34%)	0 (0%)
Cannabis sativa	0 (0%)	0 (0%)	1 (2%)	54 (89%)
Cocaine	2 (3%)	3 (5%)	3 (5%)	2 (7%)
Domicum	0 (0%)	0 (0%)	1 (2%)	0 (0%)
Glue	2 (3%)	0 (0%)	0 (0%)	0 (0%)
Heroin	0 (0%)	18 (30%)	3 (5%)	53 (87%)
Khat	0 (0%)	0 (0%)	4 (7%)	0 (0%)
MDMA	0 (0%)	0 (0%)	1 (2%)	0 (0%)
Naloxone	0 (0%)	1 (2%)	0 (0%)	0 (0%)
Nicotine	0 (0%)	0 (0%)	0 (0%)	6 (10%)
Pethidine	0 (0%)	1 (2%)	0 (0%)	0 (0%)
Tramadol	0 (0%)	1 (2%)	0 (0%)	0 (0%)

MDMA (3,4-methylenedioxymethamphetamine)

The effectiveness of clinic-based interventions in reducing substance abuse among clinic patients is summarized in Table 3. Clinic-based interventions decreased benzodiazepine oral abuse, smoking of cannabis sativa, injection of cocaine, and

the smoking, oral, and intravenous abuse of heroin.

Table 3: The frequency of substance use before and after intervention at the Jaramogi Oginga Odinga Teaching and Referral Hospital's opioid de-addiction clinic

Substance	Route	The initial number of users	The current number of users
Alcohol	Oral	4	2
Artane	Oral	2	0
Benzodiazepines	Injection	1	0
	Oral	**21**	**4**
Cannabis	Oral	1	0
	Smoking	**54**	**39**
Cocaine	**Injection**	**3**	**0**
	Inhalation	2	0
	Oral	3	1
	Smoking	2	0
Domicum	Oral	1	0
Glue	Inhalation	2	0
Heroin	**Injection**	**18**	**6**
	Oral	**3**	**0**
	Smoking	**54**	**12**
Khat	Oral	4	2
MDMA	Injection	1	0
	Oral	0	1
Naloxone	Injection	1	0
Nicotine	Smoking	6	5
Pethidine	Injection	1	0
Tramadol	Injection	1	1

Key: MDMA (3,4-methylenedioxymethamphetamine)

Table 4 summarizes the factors associated with regular substance abuse among patients presenting to the opioid de-addiction clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital. Withdrawal symptoms, enjoyment, peer pressure, and role models were the most common reasons for patients presenting to the opioid de-addiction clinic for regular substance abuse.

Table 4. Factors associated with regular substance use in patients presenting to the Jaramogi Oginga Odinga Teaching and Referral Hospital's opioid de-addiction clinic

Factor (the reason for regular abuse)	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Family-related stress	19(31.15)	3(4.92)	6(9.84)	11(18.03)	21(34.43)
Work-related stress	18(29.51)	7 (11.48)	11(18.03)	9 (14.75)	15(24.59)
Experiencing withdrawal symptoms	6(9.84)	2(3.28)	2(3.28)	2(3.28)	**46(75.41)**
Academic stress	25(40.98)	9(14.75)	14(22.95)	4(6.56)	8(13.11)
Role models	11(18.03)	1(1.64)	1(1.64)	7(11.48)	**40(65.57)**
Depression	13(21.31)	3(4.92)	13(21.31)	12(19.67)	17(27.87)
Peer pressure	9(14.75)	2(3.28)	2(3.28)	6(9.84)	**42(68.85)**
Low self-esteem	11(18.03)	1(1.64)	4(6.56)	6(9.84)	**36(59,02)**
Lack of social support	12(19.67)	3(4.92)	7(11.48)	12(19.67)	26(42.62)
Illicit drugs are easily accessible	9(14.75)	2(3.28)	4(6.56)	10(16.39)	**34(55.74)**
Environment	7(11.48)	4(6.56)	2(3.28)	13(21.31)	**38(62.30)**
Enjoyment	1(1.64)	2(3.28)	1(1.64)	8(13.11)	**43(70.47)**

Values in parentheses represent the percentage of total patients who responded in the affirmative for the particular factor

Table 5 summarizes the factors associated with the initiation of substance abuse in patients attending the opioid de-addiction clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital. Peer pressure, role models, and the environment were the most common factors associated with substance abuse initiation (Table 5).

Table 5. Factors influencing patients' entry into substance use at the Jaramogi Oginga Odinga Teaching and Referral Hospital's opioid-de addiction clinic

Factor (reason for initiation)	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Family-related stress	21(34.43)	8(13.11)	10 (16.39)	13(21.31)	9(14.75)
Work-related stress	22(36.07)	12(19.67)	8(13.11)	14(22.95)	5(8.20)
Academic stress	24(39.34)	9(14.75)	11(18.03)	13(21.31)	6(9.84)
Role models	8(13.11)	4(6.56)	2(3.28)	13(21.31)	**31(50.82)**
Depression	17(27.87)	7(11.48)	16(26.23)	8(13.11)	11(18.03)
Peer pressure	6(9.84)	2(3.28)	1(1.64)	11(18.03)	**41(67.21)**
Lack of social support	11(18.03)	8(13.11)	11(29.51)	18(29.51)	12(19.67)
Illicit drugs are easily accessible	11(18.03)	2(3.28)	3(4.92)	24(39.34)	21(34.43)
Environment	2(3.28)	2(3.28)	6(9.84)	22(36.07)	**28 (45.90)**

Values in parentheses represent the percentage of total patients who responded positively to the specific factor.

Table 6 summarizes substance abuse issues, reasons for missing clinic appointments, reasons for discontinuing substance abuse, and perceived benefits of substance abuse among study participants.

Table 6. Problems associated with substance use, reasons for missing clinic appointments, reasons for discontinuing substance use, and perceived benefits of substance use among study participants

Problems associated with substance abuse	Poor relationship with parents/teachers/spouse, victimized by robbery/theft, accidents/injury, loss of memory, loss of valuable items, trouble with the police, blackouts/flashbacks, medical problems (head injury, bleeding, swelling while trying to inject themselves)
Reasons for missing clinic appointments	Incarceration, busy, family meeting, high cost of healthcare services, had traveled up-country, high cost of transport, lateness, post-election violence, relapse, sickness, work-related issues, school-based issues, a false sense that all was well.
Reasons for stopping substance use	Medical complications, financial trouble, poor family relations, experienced side effects, withdrawal, doctor's advice, the need to self-change and become responsible, guilt, side effects from mixing methadone and illicit drugs, to restore self-dignity, unproductivity, lost reputation, own willingness to quit, advise from a spouse, methadone suppressed cravings, the self-realization that life was going to waste/end of a tether.
Patients' perception of the benefits of substance use	Courage to commit crimes, euphoria, extra energy and lasting longer in bed, management of chronic pain, stress management/relief, motivation to work, an avenue to meet and make friends

4. Discussion

The current study aimed to identify the types of substances used as well as the factors that contribute to substance use disorders at JOOTRH's MAT clinic in Western Kenya. The study participants' average age suggests that substance use disorder appears to be prevalent in the region, particularly among the younger members of society living in the informal settlement of 'Manyatta' in Kisumu East. According to estimates, 41% of the region's youth are unemployed. [21]. This is likely to encourage some of these youth to join drug dens and criminal gangs in informal settlements. Some of the participants openly admitted to committing petty crimes such as pickpocketing at some point in their lives, particularly during large social gatherings in Kisumu town, such as graduation ceremonies at many learning institutions in the surrounding region.

Given the average age of the study participants and the number of years they had used substances of abuse, most of these participants' substance abuse may have begun in their early twenties. This appears to be the case for participants in some Kisumu neighbourhoods (for example, Kona Mbuta, Ogango, Kibos, Lumumba, and Milimani), but not in others (e.g., Migosi, Kisumu Town, bondeni, mosque estate, and Seme). The underlying causes of these observations should be investigated further.

Many of the participants in the study were raised by their nuclear family. The nuclear family plays a significant role in methadone adherence and programme retention.

There were very few women seeking treatment. This is a common theme around the world, and it has been suggested that, due to social stigma, women prefer to receive treatment at home rather than in drug rehabilitation centers [22][23][24][25][26].

The majority of study participants had a primary school education, were employed, and spent up to 50,000 KES ($461) per month on drugs and alcohol. A lack of education may result in a low-wage job. Given that the minimum wage in Kenya

is 13, 572 KES/month ($125/month), [27] and that 74% of salaried Kenyans earn less than 50,000 KES/month (~461/month) [28], it is quite remarkable that 46% of all participants had spent more than $ 461/month on substances of abuse. Excessive spending may likely be to blame for participants' poor relationship with their parents/spouse, run-ins with the police (as a result of their involvement in crime), and the resulting financial diffculties (s).

The most commonly used drugs among clinic patients were cannabis sativa, heroin, and benzodiazepines. It's worth noting that the majority of the substances abused by the participants had street names. Benzodiazepines, for example, were commonly referred to as *'tap tap'* or *'benzo,'* artane as *'cosmos'* or *'bugizi'* and the most common form of alcohol used by participants was *'Waragi'* a cheap but potent alcoholic beverage smuggled from Uganda. Previous research has found that heroin users are more likely to abuse other substances such as benzodiazepines, alcohol, and cocaine [29]. Furthermore, benzodiazepine abuse among patients on opioid maintenance treatment is a global phenomenon, with a prevalence of 45% in France and 70% in Germany [30], 51 % in Israel [31], 47 % in the USA [32], and 38 % in Australia [33]. Co-abuse of cannabis and opioids has been linked to neurocognitive deficits in decision-making, functioning, working memory, and attention [34]. The desire to become intoxicated, craving, or withdrawal symptoms associated with abused drugs could all have contributed to co-abuse in our study participants [30][35]. Pharmacological and complementary interventions at the methadone clinic appear to have been the most effective in reducing oral benzodiazepine use as well as heroin and cannabis smoking. Pharmacological interventions include the use of methadone to improve quality of life [36]. Because many drug users present for treatment with many health, psychological, and social issues, complementary interventions such as psychosocial education/counseling, individual/group sessions, family reintegration, and job placement are recommended [36]. Other critical components of the interventions used include the establishment of drop-in centres (DICs) near drug dens, the availability of free HIV testing facilities, the use of PEER educators to recruit addicts into the clinic, and the needle-sharing programme [36]. The drop-in centres provide a safe environment for addicts to discuss their problems with psychosocial volunteers who are tasked with listening to them and offering solutions where possible [36]. Addicts in drug dens are also prepared for admission to the methadone clinic[36]. This is critical given the need to debunk some of the myths surrounding drug use, such as the belief that drugs give you the courage to commit crimes, provide extra energy and longevity during coitus, motivates one to work, and is a way to meet and make friends.

PEER educators are recovering addicts who are tasked with persuading potential recruits of the benefits of the methadone programme [36]. This is an important strategy, especially since we observed that friends were the most common source of substances of abuse and that peer pressure and role models were the most common reasons for participants in the study area's initial substance use. Community outreach is also used for grassroots mobilization and referral to the clinic, where addicts are introduced to/educated on the benefits of the methadone clinic [36]. However, because the majority of study participants live in or near three counties, namely Kisumu, Siaya, and Vihiga, much work remains to be done in order to fully tap into the hospital's catchment area of up to ten counties (Siaya, Kisumu, Vihiga, Nandi, Kericho, Kisii, Busia, Homabay, and Bungoma, and Migori).

Harm reduction programmes, such as the needle sharing programme, collect infected needles from drug addicts in dens and replace them with new needles, thereby preventing the spread of infectious diseases like HIV/AIDS and hepatitis

C [36]. Psychosocial support, adherence reinforcement, and continuous education are also provided to current clients with the goal of reducing drop-outs [36]. Plans are also in place to ensure that incarcerated clients enrolled in the program also receive pharmacological and complementary interventions at the clinic [36]. This is accomplished by transporting them daily from the prison to the clinic [36].

A transfer programme with other clinics in Nairobi (Kenya's administrative capital) and Mombasa (Kenya's second largest city) is also available to ensure continuity of service to clients who travel outside of the Western Kenya region to these cities [36]. Nonetheless, it is unclear why these interventions were not as effective in reducing study participants' use of other substances.

The main reason for the participants' regular use of substances of abuse was identified as experiencing withdrawal symptoms. This observation appears to imply that opiate addiction is still a problem among clinic patients. It should be noted that opiate withdrawal symptoms are typically extremely unpleasant, and chronic use is frequently maintained solely to relieve these symptoms [37]. The most common reason for missed clinic appointments was post-election violence, threatening the entire methadone programme. A contentious general election in 2017 sparked clashes between the police and a segment of the populace [38]. Participants' access to the methadone clinic may have been hampered as a result of these clashes.

Misguided beliefs about substance use held by participants in the study area (e.g., increased libido, courage to commit crimes, motivation to work, and an avenue to meet and make friends) highlight the need to strengthen education programmes designed to debunk these misguided beliefs.

Limitations

Urine drug screens were not performed to confirm the study participants' responses.

5. Conclusions

Peer pressure, role models, and the environment appear to be triggers for substance use disorders in the study population. Withdrawal symptoms from substance use disorders continue to encourage regular abuse of these substances, and young male members of society from the study area's informal settlements are vulnerable to substance use disorders. Clinic-based intervention measures appear to be effective in reducing benzodiazepine, Cannabis sativa, and heroin abuse. As a result, future interventions for substance use disorder should consider incorporating these measures to manage the effects of substance use disorders in similar settings. More work is needed to unravel more factors associated with substance abuse in the hospital's catchment area.

Abbreviations

MAT: Medication-Assisted Therapy; JOOTRH: Jaramogi Oginga Odinga Teaching and Referral Hospital; WHO: World

Health Organization; UNODC: United Nations Office on Drugs and Crime; DALY: Disability-adjusted Life Years; MHAT; Medical-heroin Assisted Therapy; HIV: Human Immunodeficiency Virus; PEPFAR: President's Emergency Plan for AIDS Relief; CDC: Centers for Disease Control; USAID: United States Agency for International Development; JOOTRH-ERC: Ethics and Review Committee of Jaramogi Oginga Odinga Teaching and Referral Hospital; IOC: Item Objective Congruence; SPSS: Statistical Package for the Social Sciences; KES: Kenya Shillings.

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Declarations

Authors' contributions

Conceptualization: MOO, **Data curation:** MOO and JOO, **Formal analysis:** JOO and MOO, **Funding acquisition:** MOO, JOO, MAO, MEO, MNP, LOO, **Investigation:** MOO, JOO, MAO, MEO, MNP, LOO, **Methodology:** MOO, LOO, MAO, MEO, MNP, **Project administration:** MOO and LOO, **Resources:** LOO, MOO and JOO, **Supervision:** MOO and LOO, **Validation:** MNP, and LOO, **Visualization:** MOO, JOO, FOO, **Writing original draft:** MOO, **Writing review and editing:** MAO, FOO, MEO, MNP, JOO, and LOO. All authors have read and approved the manuscript

Availability of data and materials

The datasets used and/or analyzed during the current study are available upon reasonable request from the corresponding author

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Conflict of interest

The authors state that they do not have any competing interests.

Consent for publication

Not applicable.

Ethical approval and consent to participate

The Ethical Review Committee of Jaramogi Oginga Odinga Teaching and Referral Hospital reviewed and approved the research proposal. The reference is ERC 1B/VOL.1/412. All participants were invited to a face-to-face interview after signing an informed consent form.

All responses were kept confidential, participant identifiers like names were not included on the data collection forms, and each patient was assigned a study number.

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