

## Opioid Addiction in Patients Attending Methadone Clinic at a National Teaching and Referral Hospital: Understanding Predisposing Factors and Intervention Strategies

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### Abstract

Drug addiction remains a major socioeconomic and health challenge globally with about 33% of addiction cases involving opioids. This study was conducted to address existing knowledge gaps about the profile of patients with opioid use disorder (OUD) in Kenya and to understand the coping mechanisms and strategies in dealing with OUD. We used a self-administered questionnaire to collect information among 88 patients attending a methadone assisted therapy clinic at the national teaching and referral psychiatric hospital in Nairobi. Most patients were male (71%), had attained secondary education and were in marriage (46%). The first opioid encounter occurred frequently at the age of 18-25 (58%), involved use of heroin (53%) and codeine (41%) and occurred at a party (50%) or at school (26%). Concern from family and friends (28%) and overdose with near-death experience (26%) compelled most patients to seek treatment. This study provides critical information on the profile of patients and patterns of drug abuse in Kenya, enlightening on the various coping mechanisms employed by patients to overcome the condition. The findings are invaluable in addressing the cues to opioid use in social units to enhance the odds of success in tackling this growing menace.

**Keywords:** Opioids; Drug addiction; Opioid Use Disorder; Heroin; Methadone; methadone-assisted therapy

### 1. Introduction

Drug abuse remains a perturbing global health challenge, inflicting a significant public health burden with physical, mental, and psychological implications. Besides, socioeconomic ramifications arising from drug and substance abuse are well-described (Altekruse et al., 2020). Notable reduction in productivity, job losses and costs of care and rehabilitation are but a few direct negative impacts associated with indulgence in drugs of abuse (Connery et al., 2020). Opioids constitute a class of drugs with high abuse potential. In the clinical setting however, opioids have diverse useful therapeutic indications as analgesics, antitussives and antidiarrheals and their pharmacology has been extensively studied (Reichert et al., 2021). Despite their beneficial medical applications, opioids can cause tolerance necessitating higher dosages to replicate the initial effect. Additionally, after extended use, withdrawal of the drug is associated with physical dependency that manifests via distinct withdrawal or abstinence symptoms. This occurrence, referred to as opioid use disorder (OUD), is characterized by an overwhelming and irresistible urge to consume opioids (Joseph et al., 2021). Several neuronal pathways including those mediated by endorphins are involved in the pharmacology of addiction to opioids leading to euphoria and feeling of grandiose (Volkow et al., 2016).

OUD has a multifaceted etiology, arising from an interplay of biological, environmental, genetic and psychosocial factors (Niles et al., 2021). Neurotransmitter imbalance, with dopamine frequently implicated, is an identified biological risk factor for abuse of opioids. Moreover, genetic predisposition is an important variable increasing the risk for opioid abuse (Houston, 2023). People with first-degree relatives who have a substance abuse disorder are twice as likely to develop opioid use disorder as those who do not have such relations. Environmental influences on opioid use can emanate from peer interactions and the socio-cultural norms, in the immediate surroundings, relating to opioid use (Ali, 2023). Furthermore, individuals who have a history of underlying mental illnesses such as depression, post-traumatic stress disorder, or anxiety, are more likely to develop psychosocial causes of OUD. Similar tendencies have been observed in patients with a history of childhood trauma and mistreatment, emphasizing the role of social and physical environment in the setting of OUD (Johnson & Shreve, 2020; Swedo et al., 2020).

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According to the United Nations Office on Drugs and Crime (UNODC), there are approximately 33 million opioid-dependent users. Most of these are found in Iran, owing to the country's location along the opium trade route (UNODC World Drug Report, 2020). Data reveals 3 million Americans and 16 million people globally have experienced or are presently suffering from opioid use disorder (OUD). Moreover, in the United States, about 500,000 people are addicted to heroin (Azadfar et al., 2023). Kenya's strategic geographical location in the East African region, and having its capital city, Nairobi, as a regional economic hub, are contributing factors to increasing cases of reported international narcotic drug trafficking (Orina, 2021). A comprehensive treatment plan for OUD aims to curb the craving, minimize relapse, as well as mitigate against the risks of contracting contagious diseases associated with intravenous drug use, such as HIV, Hepatitis C, and Hepatitis B (Galanter, 2018). Further non-pharmacological approaches include dissuading the patient from engaging in criminal activities by enhancing interpersonal interactions and improving personal productivity for personal and societal benefit (Szalavitz et al., 2021). Effective rehabilitation of opioid abusers therefore employs both pharmacological, cognitive, behavioral, and psychological therapies. Methadone, buprenorphine, and naltrexone are among the commonly used anti-abuse drugs available for addicts in their withdrawal phases. The intention is to wean off the patient and, supported by positive behavioral enforcement, family, and societal support, achieve a complete recovery from drug abuse (Harris et al., 2022). As the journey to full recovery can be long, the process requires determination, persistence, and cooperation from both the intervening healthcare team, the patient, and the family members of the affected individual.

There is a knowledge vacuum in Kenya, as in many other low- and middle- income countries, in relation to mental illnesses, opioid use, drug abuse addiction, and treatment profile. Together with inadequate research in these areas, there is a dearth of critical information required to mount appropriate intervention strategies to counter the growing challenge of drug abuse and its health, as well as socioeconomic implications. This study, therefore, is pivotal in the realm of substance use and addiction as it aims to understand the pattern of opioid use among patients attending the country's national referral and teaching hospital dedicated to mental health. In addition, the secondary aim of identifying coping measures by the patients and intervention strategies mounted by the health institution will pave the way for objective reviewing and assessment of their impact and inform follow-on actions.

## **2. Materials and Methods**

### **2.1 Study Design, Site, and Population**

This was a cross-sectional study conducted among patients enrolled at the methadone assisted therapy (MAT) clinic at Mathari National Teaching and Referral Hospital (MNTRH). The hospital is located 8-kilometer West of Nairobi central business district and serves as a national psychiatric referral hospital with a bed capacity of 1500 patients. The study site therefore provides a target population that is representative of the national picture of opioid abuse. Eligible participants for this study were patients who had a history of opioid abuse, were enrolled at the MAT clinic for a period of over a year (from 2018 to 2021) and provided consent to participate in the study. Patients were excluded from participating in the study if they were enrolled into the MAT clinic outside the stated study period, if they did not consent to participate in the study or if they did not have a clear diagnosis of opioid use disorder.

### **2.2 Sample Size Estimation and Sampling Technique**

The sample size for the study was determined using the Yamane formula (Yamane, 1967) and, based on the estimated number of patients attending the MAT clinic at the time of the study as 727, a sample size of 88 patients was reached. Eligible patients were then selected using simple random sampling and were allowed to participate in the study after providing informed consent.

### **2.3 Data Collection, Management, and Analysis**

Data was collected using a self-administered structured questionnaire adapted from a related study (Ngarachu, 2019). The first section of the questionnaire contained study information to enable the patient to provide informed consent. The second section of the questionnaire consisted of questions on socio-demographic information including age, gender, marital status and occupation. The third section contained questions on opioid use and management profile as well as questions on family and medical history of the patients. Raw data was then entered into Microsoft Excel 2016 where it was cleaned and sorted and password-protected. Data coding and analysis was done using IBM Statistical Package for Social Sciences (SPSS) Version 25 where categorical variables were summarised as descriptive statistics of frequencies and percentages.

## 2.4 Ethical Approval

Ethical approval was granted by the Jomo Kenyatta University of Agriculture and Technology Institutional Scientific Research and Ethics Committee (JKU/ISERC/02316/0744). Permission for data collection was granted by MNTRH (reference number JKU/2/4/8968). In addition, a National Commission for Science, Technology and Innovation (NACOSTI) license was also obtained prior to carrying out the study (licence number NACOSTI/P/22/22118). As per the declaration of Helsinki on research involving humans, informed consent was voluntarily obtained from participants before the study, and all identifier data was coded for confidentiality.

## 3. Results

### 3.1 Socio-Demographic Profile

Of the 88 patients who were enrolled into the study, most (63, 71.6%) were male and aged between 26 to 45 years. Similarly, most (65, 73.5%) participants had acquired at least secondary education as their highest level of education and were married (40, 45.5%) (Table 1).

**Table 1: Sociodemographic profile of participants (N = 88)**

	Variable	n (%)
Gender	Male	63 (71.6)
	Female	25 (28.4)
Age in years	17-25	18 (20.5)
	26-35	37 (42.0)
	36-45	26 (29.5)
	Above 45	7 (8.0)
Education Level	Primary	23 (26.5)
	Secondary	41 (46.3)
	College	21 (23.9)
	University	3 (3.3)
Marital Status	Single	23 (26.1)
	Married	40 (45.5)
	Separated/divorced	20 (22.7)
	Widowed	5 (5.7)
Employment Status	Employed	43 (48.9)
	Self-employed	36 (40.9)
	Unemployed	9 (10.2)

### 3.2 Opioid Use and Management Profile

Majority of the study respondents were on methadone treatment for 1-2 years (47 patients, 53.4%) and had used opioids for the first time when aged 18-25 years (51 patients, 58%). The most used opioids were heroin (47 patients, 53.4%) and codeine (36 patients, 40.9%). Most patients first encountered opioids at a party with friends (44 patients, 50%) or at school (23 patients, 26.1%). Drug overdose with near death experience (23 patients, 26.1%), and concern from friends and family (25 patients, 28.4%), were the most frequent reasons that led to the decision by participants to seek methadone treatment. Most participants (49 patients, 55.7%) expressed satisfaction with the services they received at the MAT clinic (Table 2).

**Table 2: Opioid use and management profile**

	<b>Variable</b>	<b>n (%)</b>
Number of years on methadone treatment	1-2 years	47 (53.4)
	3-4 years	25 (28.4)
	5 years & above	16 (18.2)
Respondents' age on first encounter with opioids	12-17 years	18 (20)
	18-25 years	51 (58)
	26-35 years	13 (15)
	36 years and above	6 (7)
Opioids used by respondents	Morphine	16 (18.2)
	Codeine	36 (40.9)
	Heroin	47 (53.4)
	Oxycodone	23 (26.1)
	Others	7 (8.0)
First encounter with opioids	Peer influence	44 (50)
	At home from parents or relatives	4 (4.5)
	At School	23 (26.1)
	From the neighborhood	7 (8.0)
	Influence from a romantic relationship	10 (11.4)
Influence on decision to seek methadone treatment	Drug overdose with near death experience	23 (26.1)
	Doctor recommendation	14 (15.9)
	Self-initiative	19 (21.6)
	Concern from friends, family and loved ones	25 (28.4)
	Fear of getting arrested	7 (8.0)
Satisfaction with services offered at the MAT clinic	Yes	49 (55.7)

### 3.3 Family and Medical History

Most respondents reported that they had a family history of abusive parents (37 patients, 42%) and hailed from families considered to be either rich (35 patients, 39.8%) or with middle income (40 patients, 45.5%). A history of antisocial personality disorder (27 patients, 30.7%), depression (24 patients, 27.3%), and anxiety (17 patients, 19.3%) were frequently reported. Most respondents acknowledged having a history of abusing other substances, chiefly cannabis (69 patients, 78.4%) and alcohol (58 patients, 65.9%). (Table 3).

**Table 3: Family and Medical History**

	Variable	n (%)
Childhood experiences	Loving parents (both mother & father)	21(23.9)
	Abusive parents (both physical & emotional)	37(42.0)
	Single parent	19(21.6)
	Orphan or lived in streets	6(6.8)
	Living in children's home	2(2.3)
	Raised by relatives	3(3.4)
Family economic background	Poor family background	13(14.7)
	Middle income family background	40(45.5)
	Rich Family background	35(39.8)
History of Mental Illness	Antisocial personality disorder	27(30.7)
	Depression	24(27.3)
	Anxiety	17(19.3)
	Bipolar disorder	7(8.0)
	Schizophrenia	3(3.4)
	None	10(11.4)
History of abuse of other drugs and substances	Alcohol	58(65.9)
	Cigarettes	48(54.5)
	Shisha/vape	24(27.3)
	Cannabis	69(78.4)
	Cocaine	26(29.5)
	Miraa	41(46.6)
	Others	15(17.0)

#### 4. Discussion

In this study, we sought to understand the pattern of opioid use among patients attending the only national referral and teaching hospital dedicated to mental health in Kenya. We also set forth to identify the various coping measures employed by the patients and intervention strategies implemented by the health institution in tackling mental challenges associated with opioid addiction. Most of the patients enrolled at the health facility during the study period were male, suggesting a higher prevalence of opioid addiction among males, consistent with reported trends in substance abuse (Fonseca et al., 2021; Rehm & Shield, 2019). However, in a study in the USA, the use of heroin was observed to be increasing faster in women than in men (Marsh et al., 2018), indicating possible geographical and sociocultural differences that may influence access to and use of opioids between genders. Understanding this gender disparity is essential for tailoring interventions that effectively address the contemporary needs of the affected population.

The finding in our study that most participants had attained at least a secondary level of education challenges the stereotype that opioid addiction primarily affects individuals with lower educational attainment (Sobotka & Stewart, 2020). Moreover, this observation further suggests that opioid addiction can affect people from various educational backgrounds, hence emphasizing the need for targeted intervention strategies that are accessible, as well as relevant, to individuals across the educational spectrum. Importantly, this should invite further investigations into the predisposing factors leading to opioid addiction across the cadre of individuals with divergent academic accomplishments. A substantial proportion (45.5%) of the respondents in this study were married, as was also reported in a related study previously (Omwoha, 2021). On the contrary, an earlier study by others reported that more than half of participants in an opioid-use study were single (Ngarachu, 2019). The institution of marriage may be helpful in the recovery from opioid addiction due to the moral support given by a spouse. However, marital conflicts or related strains can potentially hinder this beneficial aspect and even drive a person deeper into OUD (Selcuk et al., 2022). Understanding the dynamics of marital relationships is crucial in guiding the development of family-centered interventions that address the needs of patients with OUD, while incorporating their spouses or partners.

Most respondents in this study started using opioids for the first time between the age of 18-25 years, corroborating reports that have indicated adolescents and young adults, up to 25 years of age, as having the highest rates of opioid use (Shapira et al., 2020; Welty et al., 2019). More than half of the participants first encountered opioids at parties with friends and at school, in agreement with a previous study on heroin initiation that showed most people use heroin initially due to influence from friends (Costello et al., 2021).

Given the crucial role that the social setting and peer influence has in initiating opioid use, targeting OUD interventions focused on younger populations can considerably reduce the prevalence of this menace and afford multifaceted benefits of freeing a young and dynamic age group from the shackles of opioid addiction and its accompanying socio-economic consequences. While most respondents acknowledged to be involved in polysubstance abuse, heroin emerged as the most used followed by codeine; an observation that mirrors reported trends in opioid addiction (Ngarachu, 2019). It should still be noted that there seems to be a shift in opioid crisis from heroin misuse to the use of synthetic opioids that are readily available (Cook, 2022; Maclean et al., 2022). Worryingly, the observation of high codeine usage highlights the role that prescription opioids play in the overall opioid addiction menace and calls for stringent regulation and monitoring of prescription opioids. All players in the healthcare sector including suppliers and distributors of opioids need to join efforts to curb the misuse of prescription opioids. Many respondents reported a positive history of abusing other substances, with cannabis (78.4%) and alcohol (65.9%) being the most frequently used. This agrees with the "gateway theory," suggesting that the use of certain substances might increase the possibility of experimenting with more potent and addictive drugs (Zhang et al., 2021) and underscores the importance of early intervention strategies targeted at reducing the initiation of substance use, especially among individuals with a history of substance abuse. Concern from friends and family significantly influenced the decision to seek methadone treatment in close to a third of the study participants. This emphasizes the role of social support in motivating people to seek assistance as well as the importance of incorporating and strengthening such systems in the holistic approach to managing OUD.

Additionally, the observation that experiences of drug overdose with a near-death experience contributed to a considerable proportion of participants to seek methadone treatment underscores the life-threatening nature of opioid addiction and hence the urgency of addressing opioid overdose. Importantly, this also calls for comprehensive public health education not only on dangers of opioid abuse but also on emergency measures that can be taken and provision of suitable and accessible contact information for centers that can help in case of such incidences.

A significant proportion of respondents (42%) reported having abusive parents. Stressful environments in early life have been shown to increase later life propensity to mental illness and to an increased likelihood of drug abuse and addiction (Compton et al., 2019; Dube et al., 2003). Contrary to findings in another related study where most participants self-reported to be from poor families (Hayat et al., 2019), our study participants came from families they considered to be either rich or having a middle-income, suggesting that opioid addiction can affect individuals across various socioeconomic strata. Furthermore, the history of antisocial personality disorder, depression, and anxiety reported by participants underscores the strong correlation between mental health issues and opioid addiction. A high prevalence of mental disorders among people with opioid use disorder has also been reported previously whereby these individuals turned to opioids to self-medicate, cope with symptoms, or alleviate emotional distress (Morin et al., 2020). Consequently, a comprehensive approach to treatment of drug addiction is essential to address the substance use disorder in addition to addressing any underlying mental health conditions.

## 5. Conclusion

In summary, the current study uncovers important findings about the profile and factors relating to OUD and attendant management measures in the national referral mental health hospital in Kenya. In identifying the factors that influence opioid addiction, we can strengthen prevention and management strategies to reduce the number of new cases and relapses. Health promotion and public education campaigns should be incorporated in the overall quest to contain the OUD menace, supported by responsible handling and stewardship of prescription opioids.

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