Sociodemographic, clinical profile and the association with retention in treatment among patients receiving methadone treatment in Nairobi, Kenya

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Abstract

Opioid use disorder is a common condition worldwide and is associated with a significant disease burden. There is limited research on factors that influence retention in methadone treatment in Kenya. This study aimed to assess patients' sociodemographic and clinical profiles and the association of these factors with retention in methadone treatment at a clinic in Nairobi. This study used a cross-sectional descriptive design that involved retrospective abstraction of data from records of patients on methadone treatment. The data collected included: sociodemographic variables and clinical profiles of patients. The mean age was 32.9 (17-71) years, and 92.8% were males, of which 54% were actively retained in treatment. Ninety-nine percent used heroin at the start of treatment with predominant polysubstance use and early age of onset of substance use. Depressive symptoms were reported by 4.9%, anxiety symptoms by 3.2%, suicidal thoughts by 9.5%, violent behavior by 17.1%. Fifty-four patients were currently being treated for comorbid psychiatric illnesses. Physical abuse was reported by 51.7%, emotional abuse by 55.1%, and sexual abuse by 2.1%. Factors associated with retention in treatment were occupation, treatment duration, outpatient treatment attendance before starting methadone treatment, and continued use of opioids and cannabis during methadone treatment. Most participants receiving care at the methadone clinic have early onset of susbstance use and polysubstance use and, as such, are likely to present with numerous medical and psychiatric co-morbidities. Understanding the sociodemographic characteristics and treatment outcomes for clients on methadone treatment can guide opioid use prevention and treatment interventions both in schools and in the communities. Further studies are needed to identify and respond to barriers that clients on methadone treatment face that hinder the realization of positive treatment outcomes.

Keywords: Sociodemographic, clinical, opioid use disorder, retention, methadone treatment, Kenya

Introduction

Opioid use is prevalent globally with a global prevalence of 1.2% among those aged 15-64 years in 2019 and has significant public health impact due to the high burden of disease attributed to opioid use (Degenhardt et al., 2019; United Nations Office on Drug and Crime (UNODC), 2021). Opioid use disorder is an emerging problem in Africa and Kenya (Kurth et al., 2018), with the lifetime prevalence of the opioid disorder in Kenya varying depending on the population studied, including the general population (0.1%), secondary school students (1.2%) and among inpatients with substance use disorder (8%) (Kamenderi et al., 2019a: Kamenderi et al., 2019b; Kiburi et al., 2018). Opioid use contributes significantly to the burden of diseases such as increased HIV and hepatitis risk (Akiyama et al., 2019; Ayon et al., 2019).

The recommended treatment for opioid use disorder involves pharmacologic and psychosocial interventions (Hawk et al., 2015; Rhodes et al., 2015). Whilst both methadone and buprenorphine are the commonest medications for opioid use disorder (MOUD), methadone is more commonly used (Ayanga et al., 2016; Zippel-schultz et al., 2016). Retention in MOUD treatment is associated with better outcomes, including less risk of relapse, reduced risky behaviors such as needle

sharing, less involvement in the criminal justice system, and improved social function (Cox et al., 2013; Fu Lee et al., 2017). Short-term treatment is associated with increased risk of opioid overdose and mortality risk (Thomas et al., 2015). The average retention in MOUD treatment in lower-and middle-income countries is 54.3% (46.2-63.7%) at 12 months (Feelemyer et al., 2014).

Factors associated with retention to treatment include sociodemographic characteristics, living environment, route of drug use, co-occurring psychiatric disorders, polysubstance use, number of treatment episodes and readiness for treatment, route of drug use, methadone dose, and concurrent psychosocial treatments (Cox et al., 2013; Fathollahi et al., 2016; Fu Lee et al., 2017), patient perception of treatment and the clinic environment (Grønnestad & Sagvaag, 2016) and factors related to the methadone program (Simpson 2004). Due to the variations in outcomes for methadone treatment, there is a need to assess the impact of modifiable factors and the use of targeted interventions to improve treatment outcomes among individuals with opioid use disorder (Rosic et al., 2021).

MOUD treatment in Kenya was started in 2014, with methadone currently being offered in eight public facilities. At the methadone treatment clinic, individuals receive other psychosocial interventions and treatment for medical and psychiatric co-occurring illnesses in addition to the daily methadone dose. Studies show that when MOUD is combined with psychosocial interventions, the treatment outcomes tend to be better than MOUD alone (Rice et al., 2020; Zerden et al. 2020).

Therefore, this study aimed to assess the sociodemographic and clinical profile and the association with retention in methadone treatment at Ngara Methadone clinic in Nairobi, Kenya. This study's findings will help fill the knowledge gap, inform healthcare providers and policymakers on the factors that affect retention in methadone treatment, and help develop strategies for improving treatment outcomes for individuals with opioid use disorder.

Methodology

This was a retrospective cross-sectional study using medical records of individuals receiving treatment at a methadone treatment clinic in Nairobi, Kenya, whereby data was retrospectively extracted from patients' records. During enrolment to the treatment program and follow-up, patient information is routinely collected and stored in an electronic database and physical records. In this study, data collected during the start of methadone treatment will be referred to as baseline data. In contrast, the data collected as participants continued treatment is referred to as data during the follow-up phase. During the follow-up phase, a urine drug screen (UDS) is done every three months. The last UDS at the time of this study was used to assess current substance use.

The inclusion criteria for the study were (1) medical records of individuals enrolled for methadone treatment between February 2017 and July 2019 (2) records that had complete information in the variables of interest contained in the data abstraction tool. The study excluded those records that had missing data in most variables in the data abstraction tool, such as data on sociodemographic characteristics and substance use history.

As shown in Figure 1, eight hundred (800) patients had been enrolled for methadone treatment during the study period. From them, 23 had missing data in most of the variables of interest (listed below); hence, they were excluded, leaving a sample of 777 for which baseline data was available. In the second analysis that involved analysis of those active and not active in treatment, we excluded those that had been transferred to another methadone clinic (n=49), those who had been deceased (n=29), and clients who had completed methadone treatment (n=8). Therefore, data from 691 participants were abstracted for sociodemographic and clinical factors associated with retention in treatment.

The researchers designed the data abstraction tool based on a priori theoretical understanding of the topic being studied and data recorded in clinical files at the methadone treatment clinic. The data variables abstracted included; a) socio-

demographic variables: age, gender, education, marital status, employment, housing, and occupation; b) substance use history (number of substances used and duration of use): age of onset of drug use, family history of substance use c) clinic engagement: date of enrolment; d) biomedical markers- toxicology screens results for the duration of the study (the toxicology screen done at start of treatment and the last one done before the study); e) medical and mental health conditions: co-occurring disorders and; f) methadone dose. This data abstraction tool has been attached as supplementary material.

Data analysis was done using Statistical Package for Social Sciences (SPSS) version 23.0. Descriptive statistics were used to describe sociodemographic characteristics and clinical profiles of study participants, whereby categorical variables are presented as frequencies and percentages. The continuous data were presented as means with standard deviation or median with interquartile range. Multivariate logistic regression was used to determine the associations between sociodemographic characteristics, clinical profiles of clients, and retention to treatment with the use of Independent t-tests, Fisher's exact test, and chi-square tests. Odds ratio and 95% confidence interval were calculated where applicable with the threshold for statistical significance set at a p-value < 0.05.

Ethics approval was obtained from the University of Nairobi/ Kenyatta National Hospital Ethics Research Committee. Also, operational approval was obtained from the Nairobi County Research Committee and the head of the methadone treatment clinic.

Results

Participants Characteristics

Out of the 777 records abstracted for analysis, 373 were in active treatment, 49 were transferred to other clinics, 29 were deceased, three discontinued treatments, eight had completed treatment, and 315 were lost to follow-up. The mean age of the participants enrolled in the study was 32.9 and ranged from 17-71 years, and the majority (92.8%) were males. The mean methadone

dose was 61.3 (SD 20.6), and the median was 60.0 (IQR 50.0 – 75.0). The majority of participants (66.7%) received a dose between 40-80mg, with less than one percent receiving more than 120mg of methadone. Table 1 is a breakdown of the sociodemographic characteristics of the participants.

Substance use at baseline during start of methadone treatment

As shown in Table 2, almost all the participants sought treatment because of heroin use, and 451 reported injecting drug use. Among the 451 who reported injection drug use, 331 (73%) had initiated injection drug use before turning 30 years. Polysubstance use was predominant among those seeking treatment for opioid use disorder. Individuals reporting more than five substances of abuse at the start of treatment were the majority comprising 30.7%, and a majority of the clients (80.8%) had a clinical opioid withdrawal score of less than or equal to 10. Based on toxicology results, 696 (89.6%) participants were using cannabis when starting methadone treatment. Table 2 summarizes the substance use history and the participants' clinical opioid withdrawal symptoms (COWS) scores at the time of starting methadone treatment.

Age of substance use onset and type of substance used

Table 3 summarizes the age of exposure to a substance and the frequency of use which shows that cannabis and benzodiazepines were the two drugs that participants were exposed to earliest, at the age of five years, followed by alcohol at the age of 6 years. Almost all the participants (n=776) had used heroin with a mean age of onset of heroin use at 21.8years.

Mental health and social history at methadone treatment enrolment

At the start of methadone treatment, depressive symptoms were reported by 4.9% (n=38); anxiety symptoms by 3.2% (n=25); suicidal thoughts by 9.5% (n=74), violent behaviour by 17.1% (n=133) while 54 patients were currently being treated for a comorbid psychiatry illness namely: major depressive disorder (33.3%), psychotic disorders

(16.7%), posttraumatic stress disorder (11.1%) bipolar disorder 5.6%, personality disorders (8.4%) and attention deficit hyperactivity disorders (5.6%). More than half of the participants (51.7%, n= 402) reported being subjected to physical abuse, emotional abuse by 55.1% (n=133), and sexual abuse by 2.1% (n=16). 3.1% (n=44) reported having a partner using substances, and 2.2% had a partner in recovery for substances use disorder. 1.3% (n=10) reported substance use by parents and 8% (n=62) reported substance use by other family members, and 50.3% reported growing up with no parents.

Current substance use

There was contined susbstance use during methadone treatment as reflected from the routine urine drug screening done. Cannabis was used by 66.3%, opioids by a third (33.2%) and benzodiazepines by 14.2%. This is shown in Table 4.

Treatment retention

Treatment retention at the time of this study was 54%, whereby the mean duration of treatment of those who dropped from treatment was 13 months and 30.6 months for those who were active in treatment. Table 6 summarises factors that were associated with treatment retention. The factors that had statistically significant association wit treatment retention include: occupation whereby those with unskilled manual labor had a lower risk of loss of retention to treatment (OR=0.6 (0.3 – 0.9, p=0.041); duration of treatment with longer duration associated with retention in treatment; attendance of outpatient clinic before starting methadone reduced the risk of dropping out of treatment; continued use of opioids increased risk for dropping out of treatment and; cannabis use which was associated with reduced risk of dropping out of treatment.

Discussion

This study assessed the sociodemographic and clinical profiles of patients receiving methadone treatment at a clinic in Nairobi and their association with retention in treatment.

The majority of participants were males comprising 92.8%, a finding similar to regional studies among patients on methadone treatment in South Africa and Tanzania (Gloeck et al., 2020; Lambdin et al., 2014; Scheibe et al., 2020). Past research shows that men tend to use the substance more than women. However, women tend to develop a substance use dependence faster than men and present to treatment earlier (McHugh et al., 2018; Tuchman, 2010). While this may be due to differences in sociodemographic, biological, and clinical factors between the two genders (Tuchman, 2010), it may also reflect a difference in drug use opportunities due to social and cultural perception such as stigma and role of women in the society (UNODC 2021) and availability of substances (Bawor et al., 2015). On the other hand, recent studies show a reducing gap in substance use between males and females (McHugh et al., 2018). This gender variation can be attributed to access to substances, ability to procure them, social environments, and age of substance initiation.

This study found that most participants (80.6%) were aged between 20-40 with an early mean age of initial substance use (heroin at 21 years and cannabis at 17 years). In addition, a minimum age of 5 years was reported for initial substance use for cannabis and benzodiazepines. Injection drug use (IDU) was also reported to occur early, 38.5% reporting to have started IDU when younger than 20 years of age. This reflects early age of onset of substance use, as seen in a study among primary school students whereby a fifth reported lifetime substance use (Lelei et al., 2020). The young age of onset of substance use is associated with polysubstance use, more severe substance use disorder, and worse outcomes (Lynskey and Hall 1998; Rosic et al., 2021)). There is a need to implement primary prevention strategies, especially among the youth (Afuseh et al., 2020; Compton et al., 2019). Recognizing this need, the National Authority for Campaign against Alcohol and Drug Abuse (NACADA) has developed guidelines on substance use prevention (NACADA 2021a) with specific guidelines for prevention and management of substance use in elementary schools (NACADA 2021b). If implemented, these school-based prevention strategies may help alleviate the early onset of substance use. In addition, early referral to methadone treatment

should be enhanced to improve the effects of treatment (Hadland et al., 2018).

Exposure to substances had a significant impact on socioeconomic status, including education, marital status, and secure gainful employment. Given that less than a tenth (9.4%) had acquired tertiary education, most participants (59.6%) worked in informal sectors as unskilled manual laborers. The majority of participants (42.1%) were either separated or divorced. Although not explicitly stated in the clients' records, this may imply opioid use as a cause of family breakdown and dysfunction. Family plays an essential role in the onset and development of opioid use and the recovery process (Fu Lee et al., 2017; Pettersen et al., 2018), and patients with dysfunctional families may lack the support system that is required to support treatment and recovery from opioid use (Pettersen et al., 2019). Therefore prevention and early treatment for opioid use disorder can help mitigate the associated dysfunction in occupation and relationships (Pettersen et al., 2018).

Almost all participants (99.1%) used heroin, with only one participant reporting prescription opioids. This may be due to the nature of clients enrolled in the methadone program, with the main target being key population individuals with injection drug use (Guise et al., 2019; Rhodes et al., 2015). This provides a gap for further research to assess the use of other opioids in Kenya.

At the time of starting methadone treatment, findings from our study show that cannabis was the commonly used substance (89.6%) followed by nicotine (88.8%), benzodiazepines (54.6%), and alcohol (52.8%), a pattern that is reported in other populations (Morgan et al., 2019). This may reflect these substances' easy availability and costs in our setting. While cannabis is reported as a gateway drug to other substance use, cannabis, alcohol, and cigarette use have been reported to precede heroin use (Morgan et al., 2019); hence screening and early treatment for other substance use may help in the prevention of opioid use.

A pattern of polysubstance use was observed, with the majority (30.7%) using more than five substances at the start of treatment compared to only 1.3% who used opioids only. This is a pattern

reported among patients with opioid use disorder (Carlsen & Lunde, 2020; Morgan et al., 2019; Shams et al., 2019). Factors contributing to this polysubstance use could be genetic, environmental factors, and possible synergistic effects of drugs (Shams et al., 2019). This indicates the need to incorporate integrated treatment for other substances during methadone treatment for optimal outcomes for patients (Carlsen & Lunde, 2020).

There was continued substance use during follow-up whereby based on urinary drug screen, opioids, cannabis, and benzodiazepines were the commonest substances that were still being used by 33.2%, 66.3%, and 14.2% of participants, respectively. Continued substance use during methadone treatment has been reported in other areas and can be attributed to several factors (Morgan et al., 2019). This continued substance use is associated with poor retention and other adverse outcomes during methadone follow-up (O'Connor et al., 2019; Klimas et al., 2019).

At the start of treatment, symptoms of depression, anxiety, suicidal thoughts, and violent behavior were commonly reported by 4.9%, 3.2%, 9.5%, and 17.1%, respectively. In addition, 6.9% were on treatment for dual diagnosis during follow-up. Psychiatry co-morbidity is common among patients with opioid use disorder, with the commonest diagnosis being depression, posttraumatic stress disorder, personality disorders, and other substance use (Kidorf et al., 2004; Yang et al., 2015). There could be shared environmental and genetic risk factors for co-morbidity between psychiatric illness and opioid use, psychiatry co-morbidity arising from neuroadaptation that occurs with chronic opioid use, or opioid used for negative reinforcement to self-medicate for symptoms of anxiety and depression (Rizk et al., 2021). Psychiatry co-morbidity affects outcomes of patients on methadone treatment; hence there is a need to integrate the management of psychiatry illness among patients on treatment for opioid use disorder (Yang et al., 2015).

In this study, participants reported emotional abuse (55.1%), physical abuse (51.7%), and sexual abuse (2.1%). In addition, parental substance use was reported by 1.3%, while growing up with

one or no parents by reported 41.3%. Although this data was missing for some participants (Table 5), this is significant since the above adverse childhood experiences have increased risk for opioids and other substance use (Afuse et al., 2019; Guarino et al., 2021). A study in South Africa also found a prevalence of physical abuse and sexual abuse 13% and 2%, respectively, among individuals presenting for opioid use disorder treatment (Scheibe et al., 2020), while in the study by Lambdin et al.(2014) sexual abuse was associated with risk of attrition for treatment. This shows the need for continued screening and having strategies to prevent abuse in childhood which can be through strategies targeted at the family level as a prevention strategy to reduce risk factors for substance use (Compton et al., 2019).

At the time of the study, there was a 54% retention to treatment. Similar studies such as one in Tanzania (Lambdin et al., 2014) and a systematic review by (Feelemyer et al., 2014) indicate one-year retention of slightly over 50% after one year in treatment. Duration of treatment was significantly associated with retention, whereby the mean duration of treatment for those active in treatment was 30 months compared to 13 months for those not in active treatment. This shows the importance of a longer duration of treatment.

As shown in Table 6, occupation was the only sociodemographic factor significantly associated with treatment retention. Those with unskilled manual labor had a reduced risk of being inactive in treatment. This could be because the unskilled manual was the most common occupation (reported by 59.6%); hence may imply some form of economic earning could be protective against dropping out of treatment. Previous research has shown other sociodemographic factors such as age, gender, and marital status to influence retention in treatment which were not significant in our study (O'Connor et al., 2019). This may arise due to the differences in study designs, setting, and how the assessments have been carried out.

In this study, continued substance use was significantly associated with retention in treatment, as shown in Table 6. Opioid use was associated with was increased risk of dropping out of treatment. Previous research has reported this (Klimas et al.,

2018; Rosic et al., 2021). An interesting finding was that cannabis use during follow-up was associated with a reduced risk of dropping out of treatment. Cannabis use during methadone treatment has had mixed findings in previous studies (Lake & Pierre, 2020; McBrien et al., 2019), with some studies reporting positive effects such as reduced opioids use and better retention (Scavone et al., 2013; Socías et al., 2018) while others report adverse effects such as poor retention and continued opioid use (Franklyn et al., 2017; Zielinski et al., 2017). There is a need for further research to assess this association between cannabis use during opioid use disorder treatment.

Study limitations

This was a retrospective study based on medical records of patients; hence may have missed data that could not be retrieved from the patients' records. Second, most of the data recorded in the patients' records were based on self-report at the start of treatment which is subject to bias such as recall and reporting bias due to social desirability. Third, continued substance use was based on the last urinary drug screen in the patient's records, which may not be accurate since it left out other substances not assessed in the drug screen, such as alcohol. Fourth, this study was based on analysis of data from one methadone clinic hence these findings may not be generalizable to the other clinics in other areas.

Conclusion

Majority of the clients whose records were included in this study come from lower socioeconomic backgrounds and more than a quarter of the clients initiated heroin use before they turned 20 years. Heroin was the commonest opioi used and alcohol and marijuana are two main substances that were used alongside heroin. The impact of chronic polysubstance use is manifested by the co-morbidities that participants presented at the time of starting methadone treatment, histories of abuse, and interaction with the criminal justice system. Treatment retention of 54%, though modest, brings to perspective the socioeconomic challenges that individuals face in their bid to recover from opioid use disorder.

This study has several implications for practice. First, considering the age of substance use initiation and the sociodemographic profiles of clients receiving care at the methadone treatment clinic, there is an urgent need to invest in substance use prevention interventions among the at-risk demographic population. Secondly, given that most clients with opioid use disorder started using the drug aged 30 and below, interventions need to be initiated in elementary and secondary schools. Stakeholders in the schools and communities where these clients dwell need to be informed about the early signs of substance use. Further analysis is required to understand the geographical catchment areas for these clients to develop collaborative interventions with health care providers in these settings.

Thirdly, alcohol and cannabis are two main substances used alongside opiate use disorders. Although alcohol is legal in Kenya, cannabis is not. Nevertheless, it is a widely available substance that youth have access to. Providing education to the general public about the relationship between the use of these two drugs and other illicit drugs can be an effective prevention strategy to delay the initiation of use of heroin.

Fourthly, there is need for further research to assess factors associated with retention in methadone treatment in other settings for comparison and to allow generalization of findings. In addition future studies need to use longitudinal study designs that involve follow up of patients in treatment as well as qualitative studies to understand barriers that clients on methadone treatment face that could hinder their engagement with care in order inform policies on developing support interventions that increase access to and retention in methadone treatment.

Funding source

Conflict of interests

The authors have no conflict of interest to declare.

Tables and figures

Table 1

Sociodemographic characteristics of the participants at the time of starting methadone treatment

Characteristic	Frequency (n=777)	Percentage (%)
Gender		
Male	721	92.8
Female	56	7.2
Age (years)		
≤20	12	1.5
21-30	333	42.9
31-40	293	37.7
41-50	118	15.2
>50	21	2.7
Educationlevel		
None	15	1.9
Primary	341	43.9
Secondary	348	44.8
Tertiary	73	9.4
Marital status		
Single	272	35.0
Married	163	21.0
Separated/Divorced	327	42.1
Widowed	15	1.9
Housing arrangement		
Living in a rental house	195	25.1
Living with relatives or friends	424	54.5
Living on the street	144	15.3
Occupation		
Business or formal employment	106	13.6
Unemployed	79	10.2
Skilled manual laborer	113	14.5
Unskilled manual laborer	463	59.6
Student	16	2.1

Table 2

Substance Use History at start of treatment based on self-report

Substance used	Frequency	Percentage
Heroin	776	99.1
Alcohol	410	52.8
Cannabis	696	89.6
Cocaine	78	10.0
Nicotine	690	88.8
Benzodiazepines	424	54.6
Khat	334	43.0
Amphetamines	22	2.8
Barbiturates	44	5.7
Glue	56	7.2
Other drugs	4	0.5
Withdrawal Symptoms (COWS Score)		
<=10	628	80.8
11-20	121	15.6
21-30	26	3.3
31-40	1	0.1
Not reported	1	0.1
Injection drug use		
Yes	451	58.0
No	326	42
Initial Age of IV Drug Use (N=451)		
<=20	174	38.5
21-30	157	34.8
31-40	22	4.9
41-50	3	0.7
Not reported	95	21.1
Number of substances used		
1	9	1.3
2	42	6.1
3	141	20.4
4	143	20.7
5	144	20.8
>5	212	30.7

Table 3

Summary of the age of onset of each substance used

	Mean age	Minimum age	Maximum age	Total	%
Cannabis	17.54	5	45	696	89.6
Benzodiazepines	23.17	5	51	424	54.6
Alcohol	19.02	6	48	410	52.8
Khat	19.51	6	47	334	43.0
Heroin	21.86	7	50	776	99.9
Nicotine	18.41	7	40	690	88.8
Cocaine	23.04	10	45	78	10.0

Table 4

Current substance use based on latest toxicology screen report N=691

	Yes, N (%)	No, N(%)
Cannabis	458 (66.3)	233 (33.7)
Opiates	230 (33.2)	461 (66.7)
Benzodiazepines	98 (14.2)	593 (85.8)
Phencyclidine	4 (0.5)	687 (99.5)
Barbiturates	1 (0.1)	690 (99.9)

Table 5

Summary of mental health symptoms and social history of participants

| Variable	Number	Percentage
Depression	38	4.9
Anxiety	25	3.2
Suicidal thoughts	74	9.5
Violent behavior	133	17.1
Currently on treatment for comorbid psychiatry disorder	54	6.9
Physical abuse	402	51.7
Sexual abuse	16	2.1
Emotional abuse	428	55.1
Inpatient treatment attendance	89	11.5
Outpatient treatment attendance	727	93.6
Partner abusing substances	44	3.1
Partner in recovery	17	2.2
Parents using substances	10	1.3
Other family members using substances	62	8.0
History of incarceration	443	57.0
Grew up without one or both parent	321	41.3

Table 6

Factors associated with retention in treatment on multivariate analysis

	n	Not active, n=318 (%)	Active, n=373 (%)	OR (95% CI)	p-value
Sociodemographic factors					
Sex					
Male	647	300 (94.3)	347 (93.0)	1.2 (0.7 – 2.3)	0.483
Female	44	18 (5.7)	26 (7.0)	Reference	
Age					
≤20	12	6 (1.9)	6 (1.6)	Reference	
21-30	299	131 (41.2)	168 (45.0)	0.8 (0.2 – 2.5)	0.673
31-40	264	133 (41.8)	131 (35.1)	1.0 (0.3 – 3.2)	0.980
41-50	99	41 (12.9)	58 (15.5)	0.7 (0.2 – 2.3)	0.571
>50	17	7 (2.2)	10 (2.7)	0.7 (0.2 – 3.1)	0.638
Education					
None	12	5 (1.6)	7 (1.9)	Reference	
Primary	302	138 (43.4)	164 (44.0)	1.2 (0.4 – 3.8)	0.784
Secondary	312	142 (44.7)	170 (45.6)	1.2 (0.4 – 3.8)	0.793
Tertiary	65	33 (10.4)	32 (8.6)	1.4 (0.4 – 5.0)	0.564
Marital status					
Single	237	112 (35.2)	125 (33.5)	Reference	
Married	147	62 (19.5)	85 (22.8)	0.8 (0.5 – 1.2)	0.331
Separated/Divorced	294	139 (43.7)	155 (41.6)	1.0 (0.7 – 1.4)	0.996
Widowed	13	5 (1.6)	8 (2.1)	0.7 (0.2 – 2.2)	0.538
Housing arrangement					
Rented house	181	83 (27)	98 (26.3)	Reference	
Family house	342	158 (51.5)	184 (49.5)	1.0 (0.7 – 1.5)	0.940
Streets/Unstable	125	54 (17.6)	71 (19.1)	0.9 (0.6 – 1.4)	0.646
Friend's house	31	12 (3.8)	19 (5.1)	0.7 (0.3 – 1.6)	0.461
Occupation					
Business	65	36 (11.3)	29 (7.8)	Reference	
Formal employment	21	9 (2.8)	12 (3.2)	0.6 (0.2 – 1.6)	0.320
Unemployed	69	32 (10.1)	37 (9.9)	0.7 (0.4 – 1.4)	0.298
Skilled manual	101	57 (17.9)	44 (11.8)	1.0 (0.6 – 2.0)	0.894
Unskilled manual	419	175 (55.0)	244 (65.4)	0.6 (0.3 – 0.9)	0.041
Student	16	9 (2.8)	7 (1.9)	1.0 (0.3 – 3.1)	0.950
Clinical and social profile factors					
Duration of treatment, ***mean (SD)***		13.3 (10.4)	30.2 (6.6)	0.8 (0.7 – 0.9)	<0.001
Attended inpatient treatment	67	38 (11.9)	29 (7.8)	1.6 (0.9 – 2.7)	0.064
Attended outpatient treatment	647	290 (91.2)	357 (95.7)	0.5 (0.2 – 0.9)	0.023
Psychiatry diagnosis	46	20 (6.3)	26 (7.0)	0.9 (0.5 – 1.6)	0.720

Grew up with one/ no parent	353	155 (53.6)	198 (57.7)	0.8 (0.6 – 1.2)	0.302
Physical abuse	356	155 (48.7)	201 (53.9)	0.8 (0.6 – 1.1)	0.178
Sexual abuse	14	8 (2.5)	6 (1.6)	1.6 (0.5 – 4.6)	0.399
Emotional abuse	374	162 (50.9)	212 (56.8)	0.8 (0.6 – 1.1)	0.121
Substance use-related factors					
Injecting drug use at baseline	398	183(57.5)	215(57.6)	1.0 (0.7 – 1.3)	0.980
Current cannabis use	458	177 (55.7)	281 (75.3)	0.6 (0.4 – 0.8)	0.003
Current opioids use	230	118 (37.1)	112 (30.0)	1.9 (1.3 – 2.6)	<0.001
Current benzodiazepine use	98	51 (16.0)	47 (12.6)	1.4 (0.9 – 2.2)	0.105
Number of substances at baseline					
1	9	3 (0.9)	6 (1.6)	Reference	
2	42	19 (6)	23 (6.2)	1.7 (0.4 – 7.5)	0.515
3	141	57 (17.9)	84 (22.5)	1.4 (0.3 – 5.6)	0.675
4	143	64 (20.1)	79 (21.2)	1.6 (0.4 – 6.7)	0.507
5	144	73 (23.0)	71 (19.0)	2.1 (0.5 – 8.5)	0.321
>5	212	102 (32.1)	110 (29.5)	1.9 (0.5 – 7.6)	0.391

Figure 1
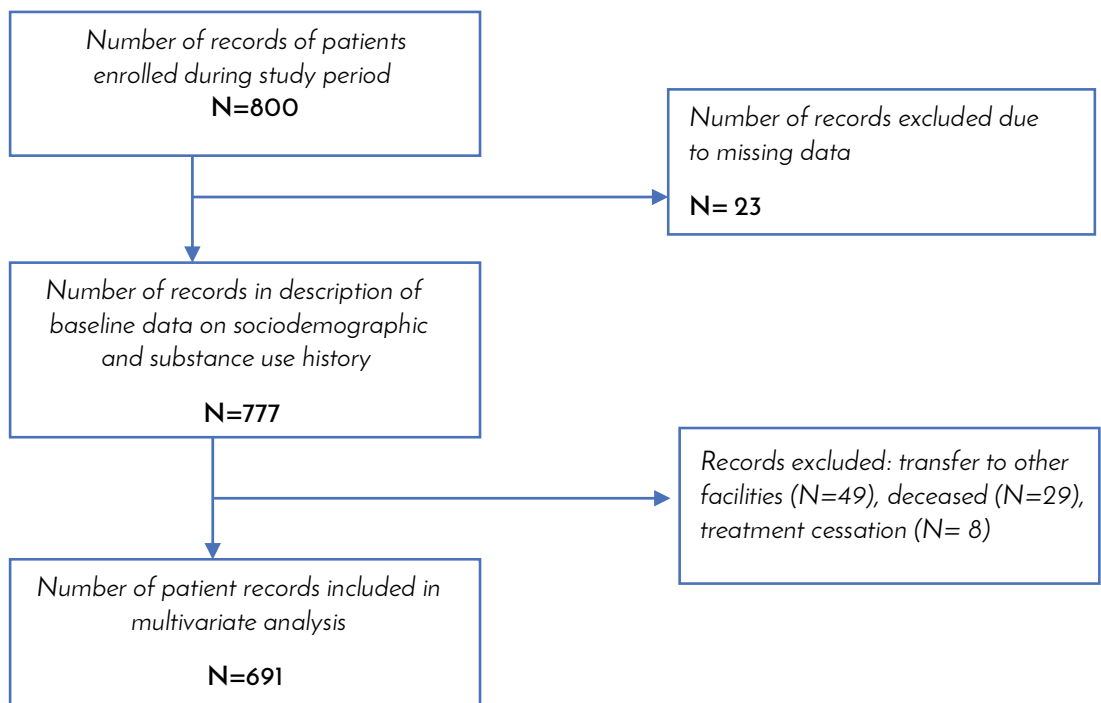
Flow chart showing the excluded records and sample size used in the analysis

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