

**UPTAKE OF MEDICALLY ASSISTED THERAPY AMONG
PEOPLE WHO INJECT HEROIN IN MATHARE LOW
INCOME SETTLEMENTS, NAIROBI COUNTY, KENYA**

GEORGE MACHARIA WAMBUGU

MASTERS OF SCIENCE

(Public Health)

**JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY**

2020

**Uptake of Medically Assisted Therapy among People Who Inject
Heroin in Mathare Low Income Settlements, Nairobi County**

George Macharia Wambugu

**A Thesis Submitted In Partial Fulfilment for the Degree of Master of
Science in Public Health in the Jomo Kenyatta University of
Agriculture and Technology**

2020

DECLARATION

This research thesis is my original work and has not been presented for a degree to any learning institution.

Signature Date

George Macharia Wambugu

This research thesis is submitted for examination with the approval of the following University Supervisors.

Signature Date

Dr. John Gachohi

JKUAT, Kenya

Signature Date

Dr. Joseph Mutai

KEMRI, Kenya

DEDICATION

This research thesis was dedicated to my father Martin Wambugu and wife Maureen Wanjiru for their moral support during the period of my struggle for this degree. Their contribution towards my success is immeasurable.

ACKNOWLEDGEMENT

I wish to express my sincere appreciation to various institutions and individuals whose assistance has facilitated the successful completion of this work. I would like to begin by thanking the Support for Addiction Prevention Treatment in Africa (SAPTA) management for giving me the opportunity to carry out the study in their Drop In Center. Special thanks to Dr. William Sinkele and Esther Gitau.

Very special thanks are addressed to my supervisors Dr. John Gachohi and Dr. Joseph Mutai for the enthusiasm with which they provided technical support, advice, constructive critical comments and the several fruitful unconditional discussions. They provided academic leadership, as well as insightful suggestions in shaping the thesis. I sincerely appreciate their constructive criticism of the drafts and suggestions on the content and structure of the thesis.

In a very special way my deepest thanks go to my family who provided much needed moral and financial support. I salute my wife Maureen Wanjiru, my brother John Wambugu and my dad Martin Wambugu.

I acknowledge with gratitude the support of Godfrey Okwemwa and other research assistants who worked very hard in logistical support and collecting data from people who inject heroin in the drop in center.

Finally, I wish to sincerely thank the research participants and many other people who contributed in many small but significant ways and whose names I may not have mentioned. You all contributed to the success of this work. God bless you all.

TABLE OF CONTENTS

| | |
|---|-------------|
| DECLARATION..... | ii |
| DEDICATION..... | iii |
| ACKNOWLEDGEMENT | iv |
| TABLE OF CONTENT..... | v |
| LIST OF TABLES | xi |
| LIST OF FIGURES | xii |
| LIST OF APPENDICES | xiii |
| LIST OF ABBREVIATIONS AND ACRONYMS | xiv |
| DEFINITION OF TERMS..... | xv |
| ABSTRACT..... | xvi |
| CHAPTER ONE | 1 |
| INTRODUCTION..... | 1 |
| 1.1Background of the study..... | 1 |
| 1.2 Statement of the problem | 4 |
| 1.3 Justification..... | 5 |

| | |
|--|----------|
| 1.4 Research questions | 6 |
| 1.5 Objective | 6 |
| 1.5.1 Broad objective | 6 |
| 1.5.2 Specific objectives | 6 |
| CHAPTER TWO | 8 |
| LITERATURE REVIEW..... | 8 |
| 2.1 Background | 8 |
| 2.2 Medically Assisted Therapy | 8 |
| 2.3 Methadone | 9 |
| 2.4 Effectiveness of MAT | 10 |
| 2.5 Availability of MAT | 10 |
| 2.6 Uptake of MAT | 11 |
| 2.7 Attitudes of People who inject heroin towards MAT..... | 11 |
| 2.7.1 Attitudes towards MAT | 11 |
| 2.8 Factors associated with uptake of MAT..... | 12 |
| 2.8.1 The law and strict regulations..... | 12 |

| | |
|---|-----------|
| 2.8.2 Poor health systems | 12 |
| 2.8.3 The eligibility criteria | 13 |
| 2.8.4 Stigma and discrimination | 13 |
| 2.8.5 Accessibility..... | 14 |
| 2.8.6 Transport..... | 14 |
| 2.9 Conceptual Framework | 15 |
| 2.10: Summary of literature..... | 16 |
| CHAPTER THREE | 17 |
| MATERIALS AND METHODS | 17 |
| 3.1 Study area | 17 |
| 3.2 Study design | 17 |
| 3.3 Study Population | 18 |
| 3.3.1. Inclusion criteria | 18 |
| 3.3.2 Exclusion criteria | 18 |
| 3.4 Determination and sampling procedure..... | 18 |
| 3.4.1 Sample size | 18 |

| | |
|---|-----------|
| 3.4.2 Sampling Procedure | 19 |
| 3.5 Data collection, storage, analysis and presentation | 20 |
| 3.5.1 Data collection tools | 20 |
| 3.5.2 Data storage | 20 |
| 3.5.3 Data analysis and presentation..... | 21 |
| 3.6 Ethical consideration | 21 |
| 3.7 Expected Outcome | 22 |
| CHAPTER FOUR..... | 23 |
| RESULTS | 23 |
| 4.1 Introduction | 23 |
| 4.2 Questionnaire Return Rate | 23 |
| 4.3 Socio-demographic characteristics..... | 23 |
| 4.4 Characterization of heroin injection and associated practices..... | 25 |
| 4.5 Proportion of Uptake of medically assisted therapy | 28 |
| 4.6 Study participants’ attitude towards Medically Assisted Therapy | 29 |
| 4.7 Health systems Attributes..... | 30 |

| | |
|---|-----------|
| 4.8.1 Socio-demographic factors and uptake of MAT..... | 32 |
| 4.8.2 Association between uptake of MAT and practices related to the injecting heroin use..... | 34 |
| 4.6.3 Association between uptake of MAT and utilization of alternative interventions..... | 37 |
| 4.8.4 Uptake of MAT and participants' attitude towards MAT | 39 |
| 4.8.5 Association between uptake of MAT and health systems attributes | 42 |
| CHAPTER FIVE..... | 44 |
| DISCUSSION, CONCLUSION AND RECOMMENDATIONS..... | 44 |
| 5.1 Discussion | 44 |
| 5.1.1 Proportion of uptake of MAT..... | 44 |
| 5.1.2 Attitude towards MAT | 45 |
| 5.1.3 Factors associated with the uptake of MAT..... | 46 |
| 5.2 Study limitations..... | 50 |
| 5.3 Conclusions | 51 |
| 5.4 Recommendations | 52 |

| | |
|--|-----------|
| 5.4.1 Study recommendations..... | 52 |
| 5.4.2 Recommendations for areas for further research | 53 |
| REFERENCES..... | 54 |
| APPENDICES | 63 |

LIST OF TABLES

| | | |
|-------------------|---|----|
| Table 4.1 | : Socio-demographic characteristics of the study participants | 20 |
| Table 4.2 | : Characterization of heroin use and associated practices..... | 22 |
| Table 4.3 | : Utilization of alternative approaches to heroin dependence | 24 |
| Table 4.4 | : Utilization of medically assisted therapy among the study respondents.... | 25 |
| Table 4.5 | : Respondents' ratings of health system attributes | 28 |
| Table 4.6 | : Relationship between socio-demographic factors and uptake of MAT..... | 29 |
| Table 4.7 | : Relationship between socio-demographic factors and uptake of MAT..... | 30 |
| Table 4.8 | : Practices related to the use of heroin | 32 |
| Table 4.9 | : Uptake of MAT and practices related to the use of heroin..... | 33 |
| Table 4.10 | : Utilization of alternative interventions and MAT uptake | 34 |
| Table 4.11 | : Association between utilization of alternative interventions and uptake.... | 35 |
| Table 4.12 | : Participants' attitude towards MAT..... | 36 |
| Table 4.13 | : Association between uptake of MAT and participants' attitude..... | 37 |
| Table 4.14 | : Health systems attributes..... | 39 |
| Table 4.15 | : Association between uptake of MAT and health systems attributes..... | 40 |

LIST OF FIGURES

| | |
|---|----|
| Figure 2.1 : Conceptual framework..... | 13 |
| Figure 4.1 : Distribution of the ages of the respondents..... | 21 |
| Figure 4.2 : Daily frequency of injecting heroin among the respondents..... | 23 |
| Figure 4.3 : Prevalence of needle-sharing among the injecting heroin users | 23 |
| Figure 4.4 : Participants' responses to statements assessing their attitude | 26 |
| Figure 4.5 : Distribution of the transport costs incurred during clinic visits | 27 |

LIST OF APPENDICES

| | |
|---|----|
| Appendix I : Structured questionnaire | 58 |
| Appendix II : PWID screening questionnaire | 65 |
| Appendix III : Informed consent form -PWID..... | 72 |

LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---------------|--|
| CDC | Center for Disease Control |
| HBV | Hepatitis B virus |
| HCV | Hepatitis C virus |
| HIV | Human Immunodeficiency virus |
| IDU | Injecting Drug Users |
| MAT | Medically Assisted Therapy |
| MOH | Ministry of Health |
| MUST | Muongano Trust |
| OST | Opioid Substitution Therapy |
| PWID | People who Inject Drugs |
| PWIH | People who inject Heroin |
| UNAIDS | United Nations Program on HIV/AIDS |
| UNDP | United Nations Development Program |
| UNODC | United Nations Office on Drugs and Crime |
| WHO | World Health Organization |

DEFINITION OF TERMS

| | |
|---|---|
| Harm reduction | This includes all programmatic interventions designed for the prevention of adverse health consequences of illicit drug use without necessarily reducing their consumption (Costigan, Crofts and Reid, 2003). The goal of harm reduction is to reduce the negative consequences of drug use and not necessarily to eliminate the use of licit or illicit drugs (Hilton <i>et al.</i> , 2000). |
| Medically assisted therapy | This is the use of Opioid agonist prescription medications for the management of persons that are dependent on opioids and have used opioids for an extended period (MOH 2013). Also known as Opioid Substitution Therapy |
| People who inject Drugs and Injecting drug users | The abbreviation IDU is used to refer to injecting drug use with the term IDUs used to denote injecting drug users. Currently, the term people who inject drugs is preferred (WHO, 2012). |

ABSTRACT

Heroin is an illegal, highly addictive opioid that is injected, snorted, or smoked. Use of injected heroin is a public health concern because it promotes spread of HIV and viral hepatitis. The national prevalence of HIV and HCV among People who inject drugs in Kenya has been reported to be 18.9% and 30% respectively. Mathare low income settlements has the biggest heroin injecting den in Nairobi. Medically Assisted Therapy is the use of Opioid agonist prescription medications for the management of persons that are dependent on opioids and have used opioids for an extended period. The first Medically Assisted Therapy program in Kenya was started in December 2014 in Nairobi and less than 1% of people who inject heroin were accessed this therapy. This demonstrates poor uptake. The broad objective of this study was to determine the uptake and factors associated with uptake of Medically Assisted Therapy among People who inject heroin in Mathare low income settlements. The study employed a cross-sectional study design and quantitative data was collected. The study was carried out in Support for Addiction Prevention Treatment Drop in Center where harm reduction services are provided to People who inject drugs in Mathare low income settlements. The study population was People who inject heroin who were recruited in a consecutive manner until the desired sample size of 110 was attained. An interviewer administered questionnaire was the main tool used in data collection. Bivariate analysis was conducted using chi square (χ^2) test or Fisher exact test where appropriate. Binary logistic regression was used to evaluate the factors which were predictive of uptake of Medically Assisted Therapy while controlling for potential confounders. All participating respondent signed an informed consent before participating in the study. Of the 110 people PWIH enrolled in study, 73 respondents had ever enrolled for Medically Assisted Therapy (uptake: 66% (95% confidence interval (CI) 57%, 75%)). Socio-demographic factors associated with uptake of Medically Assisted Therapy included age, gender, marital status, education level and employment status ($p < 0.05$). Association between uptake of Medically Assisted Therapy and characteristics/practices related to the use of heroin returned four significant variables ($p < 0.05$): length of time the participant had injected heroin, daily frequency of heroin injection, prior attempt to quit heroin injection and polydrug use. Key health systems factors associated with uptake of Medically Assisted Therapy Medically Assisted Therapy included personal views about eligibility criteria for People who inject heroin and hours of operation of the Medically Assisted Therapy clinic. The study identified modifiable factors associated with Medically Assisted Therapy in low income urban settlers which if prioritized can accelerate the already high uptake found in this study. In order to enhance the uptake of Medically Assisted Therapy and other harm reduction services, the study recommends exploring approaches that will address the disparities observed with respect to the sex and literacy levels of the People who inject heroin. The Ministry of health should review the Medically assisted Therapy policy guideline and develop strategies to promote and enhance satisfaction of People who inject heroin seeking care in the health facilities, particularly, ensuring that the eligibility criteria and the hours of operation in the Medically Assisted Therapy clinic are convenient to the targeted clientele.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Heroin is an illegal, highly addictive drug that is injected, snorted, or smoked and it is processed from morphine, a naturally occurring substance extracted from the seed pod of certain varieties of poppy plants (NIDA, 2014). In Kenya, injecting heroin use reportedly increased in the late 1990s with the availability of ‘*white crest*’ which replaced ‘*brown sugar*’, a lower grade of heroin, and user habits shifted from inhalation of the vapor to injecting (Guise *et al.*, 2015). A Nairobi based study reported that the most commonly injected drug is heroin by 96.5 % of participants (Tun *et al.*, 2015). According to the Kenya Annual Report 2015 by Center for Disease Control (CDC), an estimated 18,000 people use or inject heroin and other opiates in Kenya (CDC, 2015).

People who inject Heroin expose themselves to additional risks, including contracting human immunodeficiency virus (HIV), hepatitis B virus (HBV) and Hepatitis C virus (HCV) (NIDA, 2017). The sharing of contaminated needles is a major route of HIV and HCV transmission in many regions (WHO, 2012). People who Inject Drugs (including heroin) have two times as high a probability of HIV transmission per risky exposure through use of contaminated needles compared to exposure from casual heterosexual sex (Gelmon, 2009). 10% of global HIV infections are due to unsafe injecting drug use including heroin, and if Sub-Saharan Africa is excluded, up to 30% of global HIV infections are due to unsafe injecting drug use (WHO, 2008). The number of PWID globally is estimated to be 15.6 million and 17% are living with HIV, more than 50% have been exposed to HCV, and 10% have active HBV (Degenhardt *et al.*, 2017). It is approximated that 18-30% of People who inject heroin in Kenya are infected with HIV compared to an HIV prevalence of 5.6% in the general population (CDC, 2015). The

HIV prevalence among female injecting drug users (44.5%) is particularly high compared to male injecting drug users (16.0%) with a HIV prevalence almost three times higher (UNODC, 2015). Failure to address Injection Drug Use and HIV risk among PWID in this region will impact negatively on efforts to reduce new HIV incidence (Peterson *et al.*, 2013).

The WHO in collaboration with United Nations Office on Drugs and Crime (UNODC) and the Joint United Nation Programs on HIV/AIDS (UNAIDS) endorsed Medically Assisted Therapy (MAT) as a Harm Reduction intervention for people who inject opioids (WHO, 2012). Medically Assisted Therapy is the use of Opioid agonist prescription medications for the management of persons that are addicted to opioids (MOH, 2013). Medically Assisted Therapy aims to reduce the risk of contracting HIV, viral hepatitis and other blood borne viruses by substituting non-injecting drugs for the injected substance and this switches users from “black market” drugs to legal drugs dispensed under the care of a medic, therefore eliminating the risk of overdose and other medical complications (Ambekar, *et al.*, 2013). Medically Assisted Therapy has been shown to be an effective way to engage people in addressing other health needs, that’s assisting with adherence to treatment and facilitating access to the health system (WHO, 2010). Provision of MAT to PWID reduces or eliminates the frequency of heroin injection, risk of needle sharing and improve adherence to HIV medications thereby preventing HIV transmission (Gilbert *et al.*, 2013). Individuals on MAT are less likely to engage in crime and high-risk behaviors because MAT reduces the urgency of acquiring the heroin and also allows medical professionals to follow up heroin users thereby keeping PWID in treatment as well as reducing relapse (Kim and Harley, 2019).

Despite the fact that evidence indicate that MAT is highly effective, it is approximated that only 8% of PWID globally receive MAT, which is even less in developing countries, and there is substantial global inequity in uptake and access (Mathers *et al.*, 2010). Many of the barriers to effective uptake of MAT in the treatment of opiate

dependence are system-related, patient-related, and provider-related factors which include: criminalizing laws, misperceptions and stigmas attached to opiate dependence by the people who are addicted and those who treat them and the settings in which services are provided (Ambker *et al.*, 2013). Higher frequency of injecting practices is associated with more severe dependence and a lower uptake of MAT (Cumming *et al.*, 2016). A high degree of exposure to the MAT intervention to PWID is highly correlated to increased treatment uptake (Roberts, Annett, and Hickman, 2011). Uptake of MAT in those attending two or more MAT health education sessions was 72% compared with 53% in those attending 0–1 session and 50% in those not attending any sessions (Saha *et al.*, 2016). Exposure to the health education sessions predicted a high MAT uptake, but also that uptake was more likely in People who Inject Heroin (PWIH) who dropped out of MAT and are now motivated to enroll for MAT (Ambker *et al.*, 2013). Peer pressure, stigma and satisfaction with the MAT clinic staff are important barriers to treatment uptake (Latypov, 2010). Provision of free treatment increases uptake of MAT (Nosyk *et al.*, 2012). Availability of transport was reported to influence uptake of MAT (Strathdee *et al.*, 2010) (Hall *et al.*, 2014). The risk of mortality among PWIH is approximately 10 times higher than the general population, which MAT can substantially reduce by 2–3-fold (Gilbert *et al.*, 2013).

The African Union plan of action on drug control 2013 -2017 was endorsed at the 5th African Union Ministerial conference in 2012 and African Union strongly committed itself to implement the WHO harm reduction packages in which MAT is one of the packages (African Union, 2013). Kenya being one of the signatories should scale up MAT services while addressing the barriers to uptake of MAT to viral hepatitis and HIV transmission among people who inject heroin. It is estimated that a reduction of unmet need of MAT, Needle Syringe Program and Anti-Retroviral Therapy by 60% will prevent HIV incidence by 30% in Nairobi Kenya (Strathdee *et al.*, 2010). By December 2016 only less than 1% of PWID in Nairobi had been enrolled for MAT. There must be

factors contributing to this poor uptake of MAT among PWID which have not been investigated in Nairobi since the MAT program was implemented in 2014. There is hardly any data on the uptake of MAT in Kenya and Africa among people who inject heroin. This study provides information on barriers and motivational factors on uptake of MAT in Mathare low income settlements. The study therefore provides strategies that help improve the uptake of MAT among people who inject heroin and those who dropped out of MAT so as to achieve the primary goal of reduction and management of HIV and viral hepatitis. Increased uptake of MAT will reduce HIV and viral hepatitis transmission, improve adherence to HIV and viral hepatitis treatment, promote health and will also improve social productivity of people who inject heroin in Nairobi.

1.2 Statement of the problem

It is estimated that globally 1.7 million PWID are infected with HIV (WHO, 2015). Studies have established HIV epidemics among PWID in Nigeria, Tanzania, Kenya, South Africa and Mauritius with Tanzania having a HIV prevalence of 42% (Mathers *et al.*, 2010). The high prevalence of 18.3% of HIV among People who inject heroin in Kenya is a major Public Health concern (Tun *et al.*, 2015). Approximately 3.8% of all new adult HIV infections in Kenya are attributed to injecting drug use (NACC, 2014). The national HCV prevalence among PWID was estimated to be 30% in Kenya (MOH 2014) while Strathdee *et al.*, (2010) reported that HCV prevalence among PWIH in Nairobi was 61.4%. People who inject heroin sometimes have sexual relationships with the general public and can thus transmit HIV or viral hepatitis to the general population.

It is estimated that 6,216–10,937 PWID are actively using injecting drugs in Nairobi (Okal, *et al.*, 2013) and only 597 people who inject heroin were put on MAT by December 2016 in Mathari National Teaching and Referral Hospital. This shows that less than 1% of People who inject heroin are receiving MAT. This points to poor uptake of MAT and there is need to investigate the uptake and factors associated with poor

uptake among people who inject heroin in Mathare low income settlements. Poor uptake of MAT leads to spread of HIV, HCV and HBV among PWIH because they are likely to share contaminated needles and indulge in risky sexual behaviors. Poor uptake of MAT denies People who inject heroin and are HIV positive or suffering from HCV and Tuberculosis a chance to be put on treatment. Poor uptake of MAT will fail to significantly lower illicit opiate drug use, reduce illness and death from drug use, reduce crime, enhance social productivity and promote adherence to treatment of HIV, HCV or TB. Uptake of MAT among PWID has not been investigated in Nairobi since the MAT program was implemented and there is no data on uptake of MAT in Kenya and Africa.

Mathare is the second biggest slum in Nairobi, following Africa's biggest slum, Kibera (Habitat U.N, 2010) which is also located in Nairobi, Kenya. Like many informal settlements, Mathare is characterized by unsafe and overcrowded housing, elevated exposure to environmental hazards, high prevalence of communicable diseases, and a lack of access to essential services, such as sanitation, water, electricity and health services because of high cost (58%) or distance (22%) (Muungano Trust, 2011). Mathare low income settlement has the biggest heroin drug den in Nairobi.

1.3 Justification

Poor uptake of MAT is a public health concern in a developing country like Kenya. Increased uptake of MAT will reduce HIV and viral hepatitis spread, improve adherence to HIV and viral hepatitis treatment, promote health and will provide a platform for addressing other heroin related diseases (Hall *et al.*, 2014). Crime and lack of productivity will also be reduced by increased MAT uptake among people who inject heroin (Latypov, 2010). The first public MAT program in Kenya was implemented in Mathari National Teaching and Referral hospital in December 2014 which aimed to help People who inject heroin reduce or stop injecting, decrease risks to their health, and return to them to productive lives (MOH, 2013). To achieve the NASCOP's 2016

Strategy of “*The Beginning of the end of the HIV Epidemic: The Last Mile*” there is a need to avail MAT services to PWID.

This study will provide data on uptake of MAT that may be useful in reversing the trend of poor uptake of MAT to the stakeholders like NGOs, People who inject heroin, National and County governments. Data on proportion of uptake of MAT and associated factors will help National and County governments develop policies, guidelines. Data on barriers to uptake of MAT among People who inject heroin can help organizations and Ministry of Health mount supportive programs and resources to increase the uptake of MAT by improving health seeking behaviors and accessibility of MAT.

1.4 Research questions

1. What is the proportion of the uptake of MAT among People who inject heroin in Mathare low income settlements, Nairobi County?
2. What is the attitude towards MAT among People who inject heroin in Mathare low income settlements, Nairobi County?
3. What are the factors associated with the uptake of MAT among People who inject heroin in Mathare low income settlements, Nairobi County?

1.5 Objective

1.5.1 Broad objective

To determine the uptake of MAT and associated factors among People who inject heroin in Mathare low income settlements, Nairobi County

1.5.2 Specific objectives

1. To determine the proportion of the uptake of MAT among People who inject heroin in Mathare low income settlements, Nairobi County

- 2.To establish the attitude towards MAT among People who inject heroin in Mathare low income settlements, Nairobi County
- 3.To determine the factors associated with the uptake of MAT among People who inject heroin in Mathare low income settlements, Nairobi County

CHAPTER TWO

LITERATURE REVIEW

2.1 Background

Injecting drug use has increased in different countries over the last decade and the high prevalence of HIV among PWID represents a substantial global public health challenge (Kourounis *et al.*, 2016); (Mathers *et al.*, 2010). Epidemiological evidence attributes an increasingly significant role to injecting drug use in driving many national HIV/AIDS, HBV and HCV epidemics (Walsh *et al.*, 2014). High risk behavior related to sharing of contaminated syringes and drug injection equipment among PWID leads to HIV and HBV and HCV transmission (NACC, 2014). Male and female PWID are also at risk of contracting HIV through high-risk sexual behavior like unsafe sex and engaging in sexual behavior under the influence of drugs or in exchange for drugs (MOH, 2013). To address this global health challenge, better prevention of HIV spread among and from PWID is still needed, especially in resource-limited settings (Horton and Das, 2010). This health vulnerability calls for the need of responsive public health programming to meet the specific and comprehensive needs of both male and female IDUs (Kourounis *et al.*, 2016).

2.2 Medically Assisted Therapy

MAT gives illicit drug users with a substitute prescribed drug, such as methadone or buprenorphine, which is usually administered orally as direct observed therapy (WHO, 2010). MAT has been reported to be an effective treatment for heroin dependence, risk reduction related to injection drug use, HIV transmission prevention and improving PWID adherence to Ante-Retroviral Therapy (Mathers *et al.*, 2010). In the developed countries, the provision of MAT to PWID is a fundamental component of the response

to the public health concerns of injecting drug use and HIV transmission (WHO, 2010). Benefits of MAT are well documented since the treatment was introduced in the United States of America in the 1960s, with different research studies indicating risk reduction of intravenous drug use (Saha *et al.*, 2016). The use of MAT to treat heroin addiction and reduce infectious diseases among heroin users has gradually become prevalent in the last 3 decades (Lin *et al.*, 2015). Armstrong *et al.*, (2010) reported that MAT is a therapy for management of a chronic condition and not a cure for drug dependence with some clients needing the treatment for years and some for their entire life. Kourounis *et al.*, (2016) suggested that the longer a person stays in the MAT, the greater the outcomes of abstinence from heroin use. In Europe, three types of substitution treatment are available: methadone, buprenorphine, and dihydrocodeine (Astell-Burt *et al.*, 2011). In Kenya, methadone is the recommended drug for MAT in the public health sector (MOH, 2013).

2.3 Methadone

Methadone is a long-acting synthetic opioid which acts on the opioid receptors in human brain, and it was first synthesized in Germany during the World War II and used as an analgesic (Astell-Burt *et al.*, 2011). Methadone can be administered orally once daily and replaces the necessity for frequent daily heroin doses and as such, it stabilizes the drug-abusing lifestyle, reducing crime and also reducing needle sharing and risky sexual behavior (Gilbert *et al.*, 2013). Most people who have used heroin will experience few side effects from methadone and evidence shows that methadone treatment, when delivered in an appropriate standard of care, is a safe substitution medication for opioid dependence as it effectively retains people in treatment and averts heroin use (MOH, 2013). In countries that provide MAT, Methadone maintenance therapy is recorded as the most widely used treatment modality (Peterson *et al.*, 2013).

2.4 Effectiveness of MAT

Studies have suggested that MAT is the most effective treatment for opioid dependence (Kourounis *et al.*, 2016). MAT programs are effective in substantially reducing illicit opiate use, HIV risky behaviors, death from overdose, crime and financial stresses on PWID and their families (Gilbert *et al.*, 2013). These programs also improve adherence to antiretroviral therapy and the health of PWID (Tran *et al.*, 2012); (Rhodes *et al.*, 2015). Majority of PWID with poor health are attracted by these programs, which then act as gateways to primary health care, screening and management of HIV, tuberculosis, viral hepatitis and sexually transmitted infection (Astell-Burt *et al.*, 2011); (Tran *et al.*, 2012).

2.5 Availability of MAT

Methadone and buprenorphine are on the 16th model list of WHO essential Medicines list (Reidenberg, 2010). Nevertheless, doubts about the rationale of providing MAT to PWID are widespread in resource limited countries, where abstinence of drug use is often seen as the only legitimate treatment goal, and human rights abuses frequently occur in attempts to achieve this (Jürgens *et al.*, 2010). Medically Assisted Therapy is available in 70 countries worldwide (Latypov, 2012). Mathers *et al.*, (2010) reported that only 3% of PWID in China and India access MAT with MAT being unavailable in the Russian compared with 69% of PWID in Australia and 90% of PWID in the United Kingdom of Great Britain and Northern Ireland receiving such therapy. In spite of the evidence of effectiveness of MAT in reversing many of the health adverse effects associated with injection drug use, is underused or unavailable in most developing countries (Kourounis *et al.*, 2016). Barriers to effective implementation of MAT programs in these settings include: poor political will; restrictive laws; entrenched social and structural discrimination against PWID; lack of financing MAT programs (in spite

of the significant evidence of cost-effectiveness) and the relative lack of local evidence for effectiveness in resource-limited settings (Sharkey *et al.*, 2010).

2.6 Uptake of MAT

Mathers *et al.*, (2010) reported that only 8% of PWID globally currently access MAT which is even less in developing countries. MAT coverage is poor in many countries with only 3% of PWID on treatment (Peterson *et al.*, 2013). There is an urgent need to improve coverage of HIV prevention and management services targeting PWID because they are very low globally (Mathers *et al.*, 2010). The number of drug users with opioid dependence far exceeds treatment capacity across the United States of America (Jones *et al.*, 2015). For MAT to have an impact on the overall HIV burden, MAT services need to be accessible and retain in treatment as many injection drug users who seek these services as possible (Tran *et al.*, 2012). There is poor accessibility of MAT in resource limited settings countries leading a lower uptake of 37% (Lawrinson *et al.*, 2008).

2.7 Attitudes of People who inject heroin towards MAT

2.7.1 Attitudes towards MAT

Reasons for poor uptake include negative attitudes toward MAT (Zaller *et al.*, 2009), and lack of training for providers (Hall *et al.*, 2014). Biased attitudes towards MAT among the general population, health workers, and injecting drug users, based upon wrong information about MAT, have led active resistance to MAT (Boltaev *et al.*, 2012). It is noted that knowledge, perceptions and information training plus inter-organizational strategic planning intervention is an effective means to change attitudes and referral intentions regarding MAT community corrections settings (Friedmann *et al.*, 2015). 85% of IDUs report that improving education on MAT and promotion will increase enrollment and compliance rates (Yuanzao *et al.*, 2009).

MAT has saved many lives, but still there is active opposition towards MAT by the general population and PWID seeking MAT sometimes find that their Medical professionals may have a biased perception of MAT despite evidence of its many Medical benefits (Knudsen, Abraham and Roman, 2011). Misunderstanding of MAT, its effects, and possible side effects prevents people who inject heroin starting MAT or causes them to prematurely terminate service and some families view methadone as more addictive than heroin or MAT as merely replacing one addiction with another and hence oppose it, while others have overly high expectations and this leads to disappointment (Yuanzao *et al.*, 2009).

2.8 Factors associated with uptake of MAT

To worsen the health challenges encountered by PWID is the persistent under-utilization of MAT because of clinical, financial and societal barriers that prevent millions of heroin users from receiving this treatment (LAC, 2015).

2.8.1 The law and strict regulations

Barriers to uptake of MAT include: restrictive laws preventing prescription of opioid substitution therapy medicines methadone and/or buprenorphine (Kourounis *et al.*, 2016). Heroin dependent individuals wishing to access OST face police harassment for example, in Kyrgyzstan, police have stationed themselves outside MAT clinics requesting bribes failure to which they arrest them or threaten to plant drugs (OSF, 2008). Discriminative policies denying access to MAT in the criminal justice system are not only harmful, but also violate human rights laws and the human rights of those dependent on heroin (LAC, 2011).

2.8.2 Poor health systems

Barriers to uptake of MAT include inadequate state support for these programs; limited funding, limited capacity within countries to provide services ((Kourounis *et al.*, 2016)

and the long waiting lists that fail to motivate PWID from enrolling for MAT (OSF, 2008). Poor referral service for MAT clients forced to travel—IDUs cannot be referred to other MAT clinics at their destination easily and IDUs admitted to hospital cannot receive MAT (Yuanzao *et al.*, 2009).

2.8.3 The eligibility criteria

A restrictive eligibility criterion in MAT clinic is one of the barriers to uptake of MAT (Kourounis *et al.*, 2016). Some countries like including Ukraine and Uzbekistan, began MAT with a rigid eligibility criteria that limited the number of those not living with HIV who can receive substitution therapy and this favoured those with infected with HIV while denying MAT to those at risk (OSF, 2008). The inclusion criteria in Kazakhstan is unfriendly to heroin users because of the requirement to justify (without any clarification on how) of at least two documented unsuccessful at abstinence and/or at least a three-year history of injecting drugs (Boltaev *et al.*, 2012). In Georgia, an unfavorable criterion to heroin users requires them to reach a certain age or show history of multiple documented attempts at quitting using opioids (OSF, 2008). This has been found to hinder uptake of MAT. Georgians who want to enroll for MAT must be over the 25 years old; be active opioid users for more than three years; be active injectors for at least one year; and be able to document an unsuccessful treatment in a licensed institution (OSF, 2008)

2.8.4 Stigma and discrimination

Stigma and discrimination, and perception on drug use have been associated with negatively influencing uptake of MAT especially among the police and criminal justice system (Kourounis *et al.*, 2016). Zaller *et al.*, (2009) reported that poor uptake of MAT is associated with stigma, cost, and negative attitudes towards the therapy. The stigma often associated with drug use disorder which is influenced by perceptions that addicts are moral failings, rather than they are suffering chronic diseases, can exacerbate these

treatment barriers (Van-Boekel *et al.*, 2013). In Kenya, widespread stigma remains a major impediment to providing effective HIV prevention services and heroin dependence treatment like MAT (Nieburg and Carty, 2011). Van-Boekel *et al.*, (2013) reports that negative attitudes among medical professionals towards people dependent on opioids, can contribute to a reluctance to provide health services to this discriminated group.

2.8.5 Accessibility

Lack of access to opioid substitution programs has been associated with poor uptake of this treatment (Cicero, Ellis and Kasper, 2017). Inconvenient opening hours, most clinics are only open when IDUs with jobs need to work, and difficulty in gaining access especially for rural residents was found to lead to poor uptake of MAT (Yuanzao *et al.*, 2009). Boltaev *et al.*, (2012) found that MAT clinic operational hours are not always responsive to patients' needs despite the fact that PWIDs are required to take their treatment daily in MAT clinic while meeting their social responsibilities. Methadone is largely unavailable at Chinese hospitals forcing PWIDs to sacrifice one form of lifesaving care to receive another while in Ukraine methadone or buprenorphine is not offered in maternity hospitals frequently forcing pregnant women to risk painful withdrawal effects and risking the life of fetus in labor. (OSF, 2008).

2.8.6 Transport

Lin *et al.*, (2015) reports that substitution therapy is a 24-hour agonist that must be taken daily meaning that transportation costs influence access to MAT which can be a heavy burden financially and in time for PWID. This can lead to poor adherence for those enrolled to MAT and can demoralize PWIDs not on MAT. Cost of daily doses and travel to MAT clinic can exceed the daily cost of heroin and thus leading to poor uptake of MAT (Yuanzao *et al.*, 2009). PWID dependant on opioids may be forced to be absent

from work or spend more money on transportation to keep up with their medication and in such circumstances, (Lin *et al.*, 2015).

2.9 Conceptual Framework

The Figure 2.1 shows the conceptual framework that clarifies the relationship and influence between the independent and dependent variables. It provides a clear concept of the areas in which meaningful relationships are likely to exist (Cargan, 2007). It links to the statement of the problem and sets the stage for presentation of the specific research question that drives the investigation being reported.

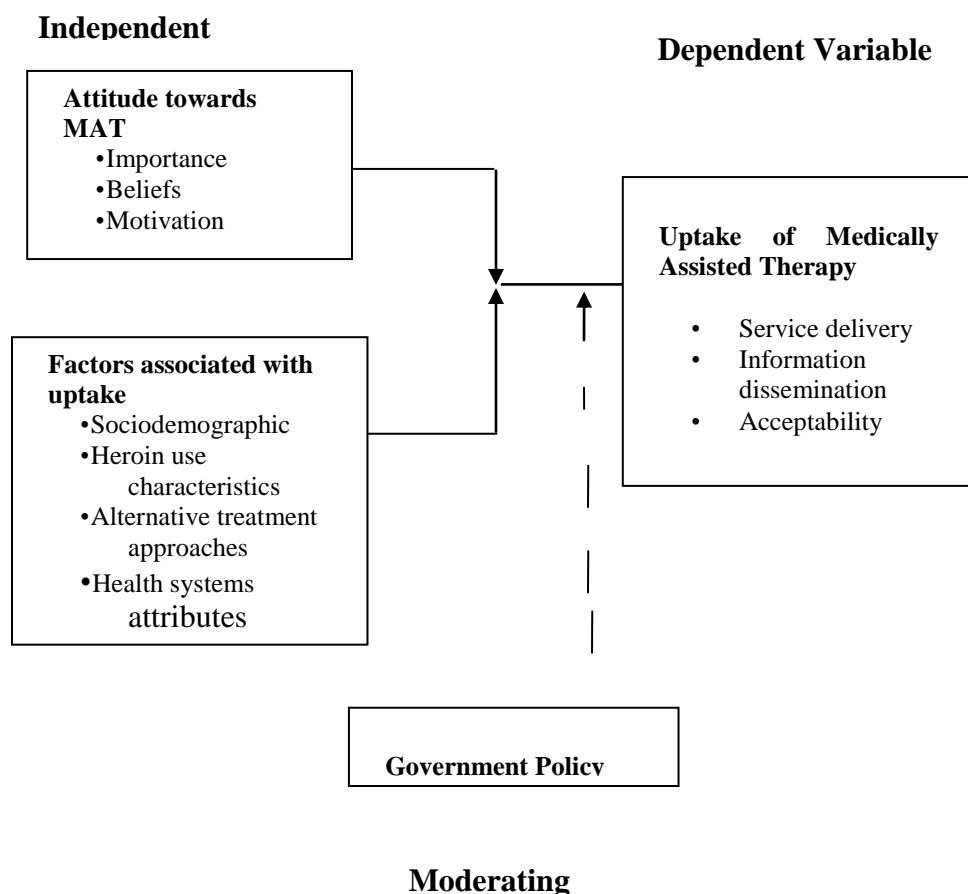


Figure 2.1: Conceptual Framework of uptake of Medically Assisted Therapy and associated factors

2.10: Summary of literature

It is evident that there are significant predictors that either motivate or create barriers in uptake of MAT. Negative attitude towards MAT among PWID has been found to create barriers in MAT (Knudsen *et al.*, 2010). Health system attributes, punitive drug laws and sociodemographic factors are associated with uptake of MAT is a public health concern (Strathdee and Stockman, 2010); (Mathers *et al.*, 2010). There was insufficient data in Africa on uptake of MAT. This study provided evidence that can be used to accelerate uptake of MAT.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study area

This study was carried out in Support for Addiction Prevention Treatment (SAPTA) Drop in Center where needles and syringes and other harm reduction services are provided to PWID in Mathare low income settlements. SAPTA Drop in Center is located in Pangani, Starehe Sub-County, Nairobi County within Juja Road Estate about 300 metres off the busy Juja Road and it serves heroin users from Mathare low income settlements (Ikiara, 2016). The center was established in July 2012 to provide Injecting Drug users with harm reduction services such as psychological counselling, nutritional support, diagnosis and referral for STI, prevention and diagnosis of TB and Needle Syringe Exchange Program. Mathare is an informal settlement that is one of the largest slums in Nairobi, Kenya and it is home to nearly 200,000 people confronting a range of challenges (Muungano Trust, 2011).

3.2 Study design

The study employed a cross-sectional study design and the data collected was quantitative. Cross-sectional studies are usually conducted to estimate the prevalence of the outcome of interest for a given population at a specific point in time (Sedgwick, 2014). Data can also be collected on individual characteristics, including exposure to risk factors, alongside information about the outcome.

3.3 Study Population

The study population was People who inject heroin. The study population was met in the Drop in center where they collected needles and syringes or seek other harm reduction services.

3.3.1. Inclusion criteria

People who Inject heroin who:

- were ≥ 18 years of age,
- have injected heroin for ≥ 6 months

3.3.2 Exclusion criteria

People who Inject heroin that were:

- very sick,
- intoxicated by heroin and can't make a sound judgment
- not willing to participate in the study
- other heroin users who don't inject heroin

3.4 Determination and sampling procedure

3.4.1 Sample size

The sample size was estimated using Yamane (1967:886) sample size determination formula that provides a simplified formula to calculate sample sizes for small proportions. A 95% confidence level and $P = 0.05$ was assumed. SAPTA serves an average of 150 people who inject heroin in the Drop in Center per month. People who

inject heroin are hard to reach population in the community because heroin use is illegal and therefore they hide.

$$n = N / \{1 + N(e)^2\} \text{ (Yamane 1967)}$$

Where:

n is the sample size (110)

N is the population size (150)

e is the level of precision (0.05)

In the present study, $n = 150 / \{1 + 150(0.05)^2\}$

n = 110 participants.

3.4.2 Sampling Procedure

The study subjects were recruited using Consecutive sampling method during routine follow-ups at the Drop-in Centre until the desired sample size was attained. The sample was selected in the SAPTA Drop in Center where NSP is supplied to PWID.

Consecutive sampling is defined as a non-probability sampling technique where samples are picked at the ease of a researcher more like convenience sampling, only with a slight variation. Here, the researcher picks a sample or group of people meeting the criteria of inclusion is selected until the required sample size is achieved (Mathieson, 2014). This sampling technique gives the researcher a chance to work with multiple samples to fine tune his/her research work to collect vital research insights. In this sampling method, each consecutive eligible individual seeking health services is approached for enrollment (Setia, 2016). This sampling method includes all individuals

seeking health services who are accessible within the defined study time period thereby providing some structure (Straus, 2005).

The study subjects were recruited when they came to the Drop in Center for harm reduction services and psychosocial services.

3.5 Data collection, storage, analysis and presentation

3.5.1 Data collection tools

An interviewer-administered questionnaire was used to collect data on demographic and socioeconomic characteristics, attitude on MAT, attributes on drug use and utilization of harm reduction services. A questionnaire is a data collection method for the elicitation, and recording and collecting information (Patten, 2016). The questionnaires consisted of closed ended questions with fixed set of questions to be answered by stakeholders in a specified sequence and with pre-designated response options. Data on attitude towards MAT was collected using a Likert scale.

3.5.2 Data storage

Collected data from the study was thoroughly checked and validated for accuracy and completeness. The data collected was handled with utmost confidentiality and was accessible only to the researcher. The quantitative data was stored in a secure database and a hand drive for backup before and after analysis. Primary data on the questionnaire and notes was kept under lock and key in a cabinet while electronically stored data was password protected for the entire duration of the study. All secondary data obtained (in hardcopy) was stored in the principal investigator's office in a lockable cabinet with limited access to researcher and electronic data was secured in folders that are password protected. Sharing of the data was only made when necessary between the researcher and the Supervisors.

3.5.3 Data analysis and presentation

The independent variables in this study was the social demographic characteristics and heroin using behaviors of the study population, knowledge of MAT, health systems attributes, attitude and perceptions towards MAT and utilization of alternative interventions to address heroin dependence. The uptake of MAT by respondents was the dependent variable.

Data were entered in Microsoft Excel and analyzed using Stata 13. Continuous variables were described as mean±standard deviation (sd) for data that were normally distributed. Median (interquartile range (IQR)) was used to describe variables that were not normally distributed. Bivariate analysis was conducted using chi square (χ^2) test or Fisher exact test where appropriate. Binary logistic regression was used to evaluate the factors which were predictive of uptake of MAT while controlling for potential confounders. The threshold for statistical significance was set at $p < 0.05$.

Results from Quantitative data analysis were presented by use of tables, figures, pie charts and graphs in relation to the research objectives and variables.

3.6 Ethical consideration

The study proposal was presented to Kenyatta National Hospital / University of Nairobi Ethical Review Committee for ethical approval. Courtesy calls were also made to Nairobi County Director of Health and the senior management of SAPTA to brief them on the intended purpose of the study and permission to access the institution and People who inject heroin. Confidentiality and privacy in accordance with Medical ethics was highly observed. All participating respondent had to sign an informed consent before participating in the study

3.7 Expected Outcome

The research findings were published in a Texila International journal of Public Health as a requirement by Jomo Kenyatta University of Agriculture and Technology for the award of Masters of Science in Public Health.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents results which have been analyzed based on themes drawn from objectives. The thematic areas include: Questionnaire Return rate, Socio-demographic characteristics of the respondents, Heroin use characteristics, alternative treatment approaches, Uptake of MAT, Study participants attitude towards MAT and factors associated with uptake of MAT.

4.2 Questionnaire Return Rate

The study targeted 110 respondents in SAPTA Drop in Center, Nairobi. The respondents are PWIH from Mathare low income Settlements. Of the 110 questionnaires distributed, 110 were filled and returned. This represents a response rate of 100% which is above the 70% statistical significance, according to (Davern *et al.*, 2010).

4.3 Socio-demographic characteristics

The current study enrolled a total of 110 participants, majority of whom were men (73%). Their socio-demographic attributes are outlined in Table 4.1. The age of the participants ranged from 21 to 67 years with the mean \pm standard deviation age being 36.1 ± 8.9 years. Participants who were married at the time the study was undertaken were 31(28%) while the proportion of the participants whose marital status was separated or divorced was 40(41%). Majority of the participants were Christians 73(66%), unemployed 60(55%) and had primary school education 64(58%).

Table 4.1: Socio-demographic characteristics of the study participants

| Characteristic | Number (n=110) | % |
|-----------------------------------|-----------------------|----------|
| Sex | | |
| Male | 80 | 72.7 |
| Female | 30 | 27.3 |
| Marital status | | |
| Single | 34 | 30.9 |
| Married | 31 | 28.2 |
| Separated/divorced | 45 | 40.9 |
| Religion | | |
| Christian | 73 | 66.4 |
| Muslim | 37 | 33.6 |
| Hindu | 0 | 0% |
| Highest level of education | | |
| Tertiary | 9 | 8.2 |
| Secondary | 31 | 28.2 |
| Primary | 64 | 58.2 |
| No formal education | 6 | 5.5 |
| Employment status | | |
| Employed (public/private sector) | 14 | 12.7 |
| Self employed | 36 | 32.7 |
| Unemployed | 60 | 54.5 |

Figure 4.1 displays the distribution of the ages of the study participants. Those aged 25 years old or less 4(4%) were the minority. Majority of the respondents (72% / n=79) were between 26 to 40 years with 28(25%) being over 40 years of age.

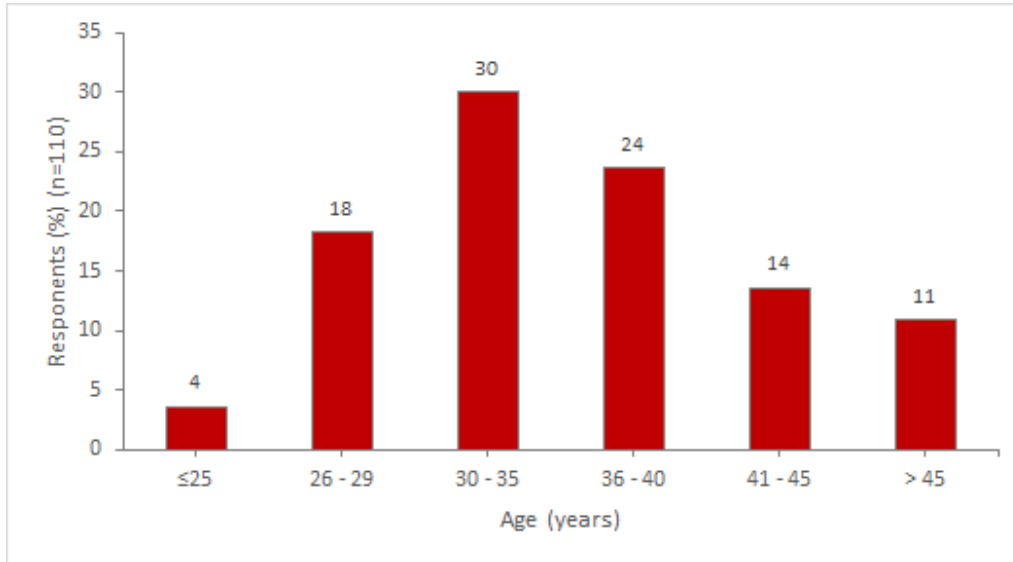


Figure 4.1: Distribution of the ages of the respondents

4.4 Characterization of heroin injection and associated practices

Investigations on the period the respondents had been injecting heroin showed that median ((interquartile range (IQR)) time was 5 (3 - 9) years with a range of 1 to 22 years. Further inquiries revealed that 21(19%), 30(27%) and 24(22%) of the respondents had been injecting heroin for a period not exceeding one year, between 2 to 4 years and 5 to 7 years, respectively. Besides injecting heroin, 90 (82%) most of the respondents admitted that they had used tobacco one month prior to the day the survey was undertaken. Other drugs documented to have been used by the respondents during the same period included; alcohol 13(12%), marijuana 27(25%) and pills 7(6%). Overall those who were taking one, two and three drugs concurrently with injectable heroin comprised 80(73%), 15(14%) and 5(5%) of the study participants. Asked if they had ever attempted to abandon the use of injectable heroin, most of the participants responded on the affirmative 94(86%) (Table 4.2).

Table 4.2: Characterization of heroin use and associated practices

| Characteristic | Number (n=110) | % |
|---|-----------------------|----------|
| Duration on heroin use (years) | | |
| ≤ 1-4 | 51 | 46.4 |
| 5 – 10 | 42 | 38.2 |
| 11 – 15 | 5 | 4.5 |
| >15 | 12 | 10.9 |
| Other drugs used in a month prior to study | | |
| Tobacco | 90 | 81.8 |
| Marijuana | 27 | 24.5 |
| Alcohol | 13 | 11.8 |
| Pills | 7 | 6.4 |
| Cocaine | 0 | 0.0 |
| Number of other drugs used in a month | | |
| None | 7 | 6.4 |
| 1 | 80 | 72.7 |
| 2 | 15 | 13.6 |
| 3 | 5 | 4.5 |
| 4 | 3 | 2.7 |
| Ever tried quitting using heroin use | | |
| Yes | 94 | 85.5 |
| No | 16 | 14.5 |

The findings on the frequency of injecting heroin on a daily basis among the respondents are highlighted in Figure 4.2. The minimum and the maximum number of times the respondents reported injecting heroin per day were one and 12 times respectively with a median (IQR) of 4 (3 - 6) times in a day. Respondents who reported that they injected heroin once to five times, six to ten time and more than 75(68%), 33(30%) and 2(2%) respectively and times daily.

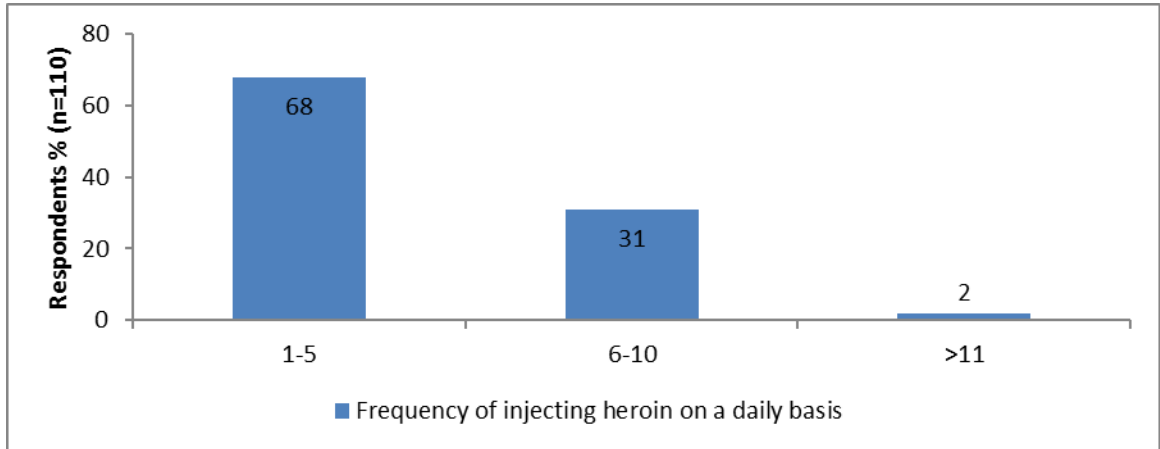


Figure 4.2: Daily frequency of injecting heroin among the respondents

The study revealed that 37(35.1%) of the study participants had engaged in sharing of needles at least once as shown on figure 4.3.

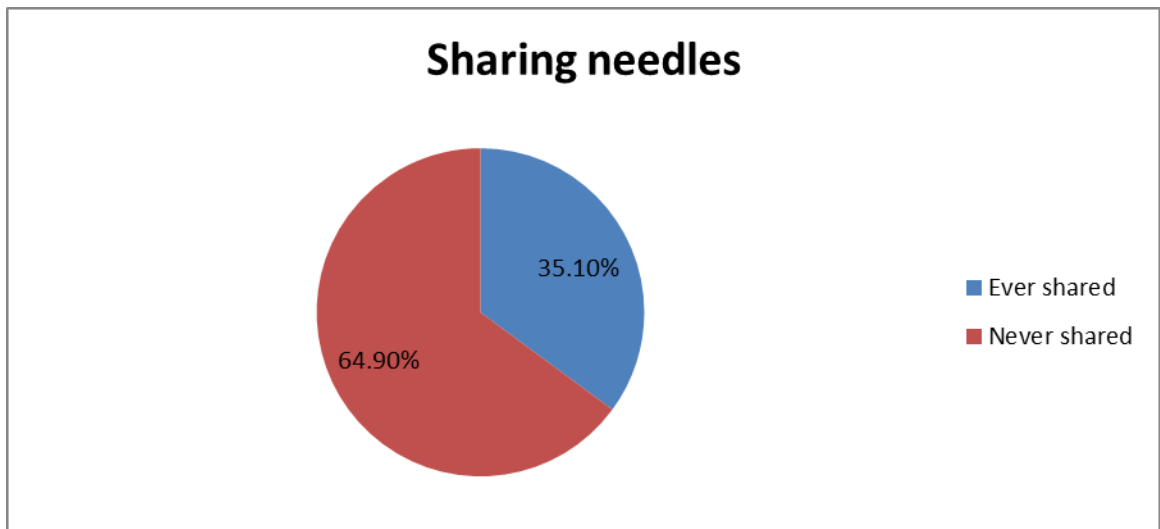


Figure 4.3: Prevalence of needle-sharing among the injecting heroin users (n=110)

Table 4.3 shows the utilization of alternative approaches to addressing injecting heroin use dependence among the study participants. These included detoxification with prescription medication 30(27%), religious intervention 41(37%), detention in community rehabilitation centre 45(41%) and addiction counseling 71(65%).

Table 4.3: Utilization of alternative approaches to heroin dependence

| Intervention | Response | Number (n=110) | % |
|--|-----------------|-----------------------|----------|
| Detoxification with prescription medication | Yes | 30 | 27.3 |
| | No | 80 | 72.7 |
| Religious intervention | Yes | 41 | 37.3 |
| | No | 69 | 62.7 |
| Detention in community rehabilitation centre | Yes | 45 | 40.9 |
| | No | 65 | 59.1 |
| Addiction counseling | Yes | 71 | 64.5 |
| | No | 39 | 35.5 |

4.5 Proportion of Uptake of medically assisted therapy

A total of 73 respondents said that they had at one time enrolled for MAT thus an uptake of 66% (95% confidence interval (CI) 57% - 75%). Of those who had ever been on MAT, 61 respondents (84%) were on the therapy at the time of was conducting the present study. Reasons for enrolling for MAT included the desire to: quit using heroin 71(97%), lead a productive life 68(93%) and stop injecting drugs' use and associated risky behavior 41(56%) among others as shown in Table 4.4. Enquiries from the 37(33.6%) participants had never enrolled for MAT revealed that, long waiting period preceding enrollment 13(35%), failure to meet the set eligibility criteria 7(19%), and non-existence of MAT services 6(16%) were some of the challenges that had hindered their enrolment for MAT. 44(72.1%) of the respondents who were currently on MAT reported that they had been accorded support by their families at the various moments of seeking the therapy (Table 4.4).

Table 4.4: Utilization of medically assisted therapy among the study respondents: facilitators and barriers

| Characteristic | Number | % |
|--|---------------|----------|
| Ever enrolled for MAT (n=110) | | |
| Yes | 73 | 66.4 |
| No | 37 | 33.6 |
| Currently on MAT (n=73) | | |
| Yes | 61 | 83.6 |
| No | 12 | 16.4 |
| Motivation for enrolling for MAT (n=73) | | |
| To quit using heroin | 71 | 97.3 |
| To lead a productive life | 68 | 93.2 |
| To stop injecting and other risky behaviors | 41 | 56.2 |
| Received information about MAT | 36 | 49.3 |
| Influenced by a friend/relative | 26 | 35.6 |
| To get HIV/TB treatment | 13 | 17.8 |
| Reasons for non-enrolment (n=37) | | |
| Long waiting list to join MAT | 13 | 35.1 |
| I don't satisfy the MAT inclusion criteria | 7 | 18.9 |
| No service exists | 6 | 16.2 |
| Inconvenient operational hours | 4 | 10.8 |
| Afraid of arrest or harassment by authorities | 3 | 8.1 |
| Methadone side effects | 3 | 8.1 |
| MAT clinic is very unfriendly to PWID | 2 | 5.4 |
| MAT clinic is far | 2 | 5.4 |
| Receives family support when seeking MAT (n=61) | | |
| Yes | 44 | 72.1 |
| No | 17 | 27.9 |

4.6 Study participants' attitude towards Medically Assisted Therapy

Evaluation of the study participants' attitude towards MAT revealed that a vast majority of the participants 106(97%) were of the opinion that MAT was useful in addressing addiction to heroin. Other findings on the assessment of the participants' attitude towards MAT are listed in figure 4.4. Majority 84(75%) did not agree with the statement

'MAT is simply an act of substituting heroin addiction with another addiction' (disagreed 78(71%) and neither agree nor disagree 4(4%)). Similarly, most of the respondents 84(77%) did not concur with the statement 'MAT has dangerous side effects than heroin' (disagreed 84(75%) and neutral 2(2%)). Respondents who were in agreement with the statements; 'MAT prevents against the spread of HIV and viral hepatitis' and 'MAT is a good way to treat heroin addiction' were 53(49%) and 104(95%) respectively. Further, most of the respondents 104(95%) were in agreement with the statement 'MAT improves the quality of life of an addict' (Figure 4.4).

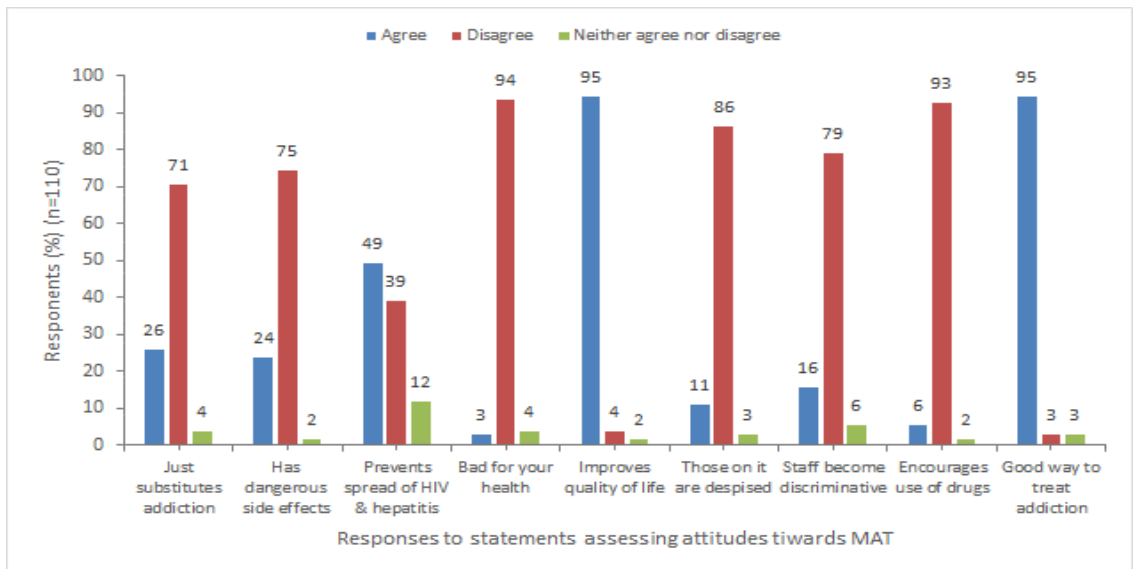


Figure 4.4: Participants' responses to statements assessing their attitude towards MAT

4.7 Health systems Attributes

The cost of transport incurred by the study participants during their visit to the clinic was in the range of Sh. 20 to Sh. 400. The median (IQR) transport cost was Sh. 110 (Sh. 60 – 200). Figure 4.4 shows the distribution of the transport costs incurred by the respondents during clinic visits. About half of the respondents (49%) paid Sh. 100 or less for transport to and from the clinic constituted by Sh. 20 (6%), Sh. 40 (9%), Sh. 50 to 80

(15%) and Sh. 100 (19%). Minority paid Sh. 300 (14%) or more than Sh. 300 (3%) for transport (Figure 4.5).

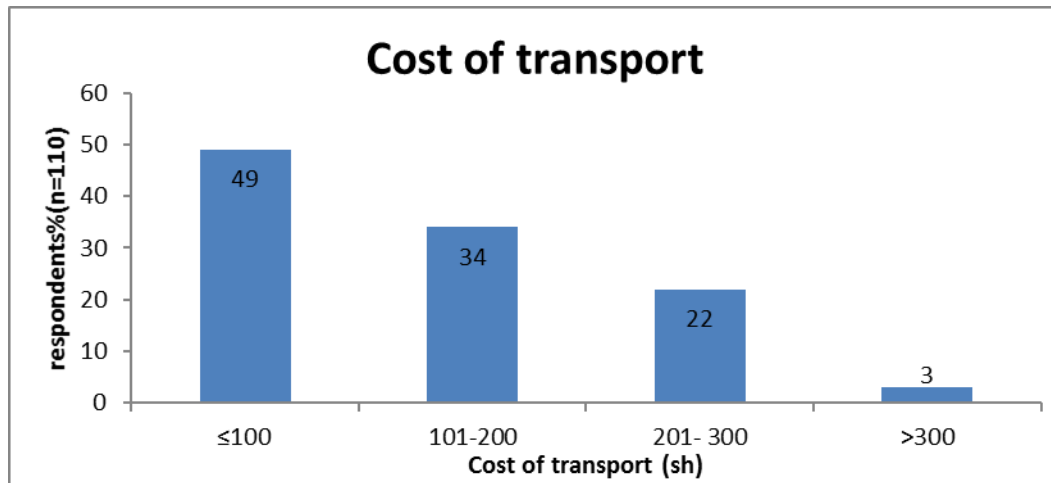


Figure 4.5: Distribution of the transport costs incurred during clinic visits

Few respondents described the expenditure on transport as affordable 38(35%). Additionally, only few respondents affirmed that ‘*the clinic was near*’ 46(42%). Respondents who felt that the clinic’s hours of operation were convenient were 56(51%). Most stated that the waiting time required prior to the enrollment for MAT was long 57(52%). Likewise, majority 72(66%) were not in favour of the MAT eligibility criteria for PWID which they termed as either bad 37(34%) or very bad 35(32%). Out of 110, 75(68%) of the respondents reported that Healthcare workers were good when the respondents evaluated them in terms of being caring, friendly and listening to the clients (Table 4.6).

Table 4.5: Respondents’ ratings of health system attributes related to provision of MAT

| Health system attribute | Category | Number (n=110) | % |
|--|-----------------|-----------------------|----------|
| Cost of transport (to & from the clinic) is: | Cost-effective | 38 | 34.5 |
| | Expensive | 49 | 44.5 |
| | Very expensive | 23 | 20.9 |
| Clinic is: | Far | 39 | 35.5 |
| | Very far | 25 | 22.7 |
| | Near | 46 | 41.8 |
| MAT operational hours convenient | Yes | 56 | 50.9 |
| | No | 54 | 49.1 |
| Waiting time to join MAT is | Appropriate | 53 | 48.2 |
| | Long | 57 | 51.8 |
| MAT eligibility criteria for PWID is | Very good | 0 | 0.0 |
| | Good | 38 | 34.5 |
| | Bad | 37 | 33.6 |
| | Very bad | 35 | 31.8 |
| Healthcare workers are caring, friendly and listening | Good | 75 | 68.2 |
| | Average | 33 | 30.0 |
| | Poor | 2 | 1.8 |

4.8 Factors Associated with Uptake of Medically Assisted Therapy

4.8.1 Socio-demographic factors and uptake of MAT

The results on the assessment of the association between Socio-demographic factors and uptake of MAT are provided in Table 4.7. A significant trend was observed whereby there was a significant increment in uptake of MAT with increasing age ($p < 0.05$). Further, a significantly higher proportion of women (83%) had ever enrolled for MAT compared to men (60%). Men had 70% lower odds of having ever enrolled for MAT compared to women (odds ratio (OR) 0.300 (95% CI 0.104-0.865), $p = 0.021$). Uptake of MAT was highest among participants who were married (83%) compared to those who were Separated or divorced (71%) and also the singles (45%) ($p < 0.05$). A trend of

increment in uptake of MAT with increase in the educational qualifications of the heroin users was observed (tertiary (89%); secondary (94%); primary and no formal education (51%), $p < 0.05$). Those who were on employment had 2.7 times higher odds of having ever enrolled for MAT when compared to their counterparts who were not employed at the time of the study (78% versus 57%, respectively, OR 2.711(95% CI 1.168-6.291), $p = 0.018$). Other sociodemographic factors assessed in this survey, including the religion practiced by the respondent and religion did not show significant associations with uptake of MAT.

Table 4.6: Socio-demographic characteristics of respondents

| Characteristic | Ever enrolled | |
|-----------------------------------|---------------|-------------|
| | Yes (n, (%)) | No (n, (%)) |
| Age (years) | | |
| > 35 | 40(74.1) | 14(25.9) |
| 30 – 35 | 23(71.9) | 9(28.1) |
| < 30 | 10(41.7) | 14(58.3) |
| Sex | | |
| Male | 48(60.0) | 32(40.0) |
| Female | 25(83.3) | 5(16.7) |
| Marital status | | |
| Separated/divorced | 32(71.1) | 13(28.9) |
| Married | 25(83.3) | 5(16.7) |
| Single | 16(45.7) | 19(54.3) |
| Religion | | |
| Christian | 53(72.6) | 20(27.4) |
| Muslim | 20(54.1) | 17(45.9) |
| Highest level of education | | |
| Tertiary | 8(88.9) | 1(11.1) |
| Secondary | 29(93.5) | 2(6.5) |
| Primary/No formal education | 36(51.4) | 34(48.6) |
| Employment status | | |
| Employed | 39(78.0) | 11(22.0) |
| Unemployed | 34(56.7) | 26(43.3) |

Table 4.7: Association between socio-demographic factors and uptake of MAT

| Characteristic | OR* (95% CI [†]) | χ^2 , df [§] , P-value |
|-----------------------------------|----------------------------|--------------------------------------|
| Age (years) | | |
| > 35 | 4.000(1.451-11.031) | 7.583,1,0.006 |
| 30 – 35 | 3.578(1.168-10.956) | 5.171,1,0.023 |
| < 30 | REF | |
| Sex | | |
| Male | 0.300(0.104-0.865) | 5.321,1,0.021 |
| Female | REF | |
| Marital status | | |
| Separated/divorced | 2.923(1.158-7.380) | 5.291,1,0.021 |
| Married | 5.938(1.846-19.092) | 9.816,1,0.002 |
| Single | REF | |
| Religion | | |
| Christian | 2.253(0.986-5.146) | 3.785,1,0.052 |
| Muslim | REF | |
| Highest level of education | | |
| Tertiary | 7.556(0.897-63.645) | 4.535,1,0.039 |
| Secondary | 13.694(3.032-61.843) | 16.616,1,<0.001 |
| Primary/No formal education | REF | |
| Employment status | | |
| Employed | 2.711(1.168-6.291) | 5.560,1,0.018 |
| Unemployed | REF | |

*Odds ratio [†]Confidence interval [§]Degrees of freedom

4.8.2 Association between uptake of MAT and practices related to the injecting heroin use

Uptake of MAT increased significantly with the length of time the participant had been injecting heroin: uptake in those with less than 5 years, 5 to 10 years and more than ten years was, respectively, 53%, 74% and 88% ($p < 0.05$). Additionally, a significant upward trend was also noted between the number of times per day one injected heroin and uptake of MAT. Uptake of MAT was 53%, 76% and 83% for those who injected heroin 1 to 3 times daily, 4 to 6 times daily and more than 6 times daily respectively ($p < 0.05$).

A statistically significant association was observed between uptake of MAT and having ever attempted to quit use of injectable heroin. A significantly higher proportion of uptake of MAT was observed among participants who had ever attempted to quit injecting of heroin compared to those who had never attempted to quit (72% against 32% respectively, OR 4.724 (95% CI 1.584-14.093) $p=0.003$). Though not statistically significant, uptake of MAT was lower in those who had engaged in concomitant use of other drugs, besides injectable heroin, during the 30-days period preceding the survey when compared to their colleagues who were injecting heroin without using other drugs in the same period (64% versus 100.0% respectively, OR 1.561(95% CI1.351-1.803), $p=0.052$). Polydrug use was significantly predictive of uptake of MAT with those using one additional drug being about 2.5 times less likely to have reported ever enrolling on MAT (OR 2.545(0.987-6.566), $p=0.049$). Sharing of needles was not associated with uptake of MAT among the study participants ($p=0.537$).

Table 4.8: Characteristics/practices related to the use of heroin

| Characteristic | Ever enrolled | |
|--|----------------------|-------------|
| | Yes (n, (%)) | No (n, (%)) |
| Duration on heroin use (years) | | |
| > 10 | 15(88.2) | 2(11.8) |
| 5 - 10. | 31(73.8) | 11(26.2) |
| < 5 | 27(52.9) | 24(47.1) |
| Frequency of injecting heroin (daily) | | |
| > 6 | 15(83.3) | 3(16.7) |
| 4 to 6 | 31(75.6) | 10(24.4) |
| 1 to 3 | 27(52.9) | 24(47.1) |
| Ever shared needles | | |
| Yes | 26(70.3) | 11(29.7) |
| No | 47(64.4) | 26(35.6) |
| Being on other drugs in the last 30 days | | |
| No | 7(100.0) | 0(0.0) |
| Yes | 66(64.1) | 37(35.9) |
| No of other drugs taken in the last 30 days | | |
| One | 56(70.0) | 24(30.0) |
| 2 + | 11(47.8) | 12(52.2) |
| Ever tried quitting using heroin | | |
| Yes | 67(72.0) | 26(28.0) |
| No | 6(35.3) | 11(64.7) |

Table 4.9: Uptake of MAT and characteristics/practices related to the use of heroin

| Characteristic | OR* (95% CI[†]) | χ², df, P-value |
|--|---------------------------------|-----------------------------------|
| Duration on heroin use (years) | | |
| > 10 | 6.667(1.381-32.190) | 6.725,1,0.010 |
| 5 - 10. | 2.505(1.038-6.043) | 4.273,1,0.039 |
| < 5 | REF | |
| Frequency of injecting heroin (daily) | | |
| > 6 | 4.444(1.145-17.248) | 5.159,1,0.027 |
| 4 to 6 | 2.756(1.120-6.779) | 5.013,1,0.025 |
| 1 to 3 | REF | |
| Ever shared needles | | |
| Yes | 1.308(0.558-3.066) | 0.381,1,0.537 |
| No | REF | |
| Poly drug use in last 30 days | | |
| No | 1.561(1.351-1.803) | 3.789,1,0.052 |
| Yes | REF | |
| Poly drug use | | |
| One | 2.545(0.987-6.566) | 3.863,1,0.049 |
| 2 + | REF | |
| Ever tried quitting using heroin | | |
| Yes | 4.724(1.584-14.093) | 8.695,1,0.003 |
| No | REF | |

*Odds ratio †Confidence interval

4.6.3 Association between uptake of MAT and utilization of alternative interventions

Participants who said that they had used prescription medications for detoxification had higher odds of having ever enrolled for therapy when assessed against those who had reported on the contrary (OR 6.652(95% CI 1.863). Uptake of MAT among the participants who reported having been detained in a rehabilitation centre was 84%. On the other hand, uptake of MAT was 54% among those had never been in a rehabilitation centre (OR 4.653(95% CI 1.814-11.938), p=0.001). Being in a rehabilitation centre was

associated with 52% increment in the odds of having ever enrolled for the therapy (odds ratio (OR) 1.517 (95% CI 1.227-1.876)). Detoxification with prescription medication was associated with 41% increased likelihood of uptake of MAT (OR 1.405(95% CI 1.182-1.671), p= 0.002). Higher uptake of MAT was noted among those who had gone through addiction counseling (73%) when evaluated against those who had not (54%), (OR 2.346(1.033-5.326), p=0.039). Religious intervention was not a significant predictor of MAT uptake (p=0.741).

Table 4.10: Utilization of alternative interventions and MAT uptake

| Characteristic | Ever enrolled | |
|---|---------------|-------------|
| | Yes (n, (%)) | No (n, (%)) |
| Detoxification with prescription medication | | |
| Yes | 27(90.0) | 3(10.0) |
| No | 46(57.5) | 34(42.5) |
| Religious intervention | | |
| Yes | 28(68.3) | 13(31.7) |
| No | 45(65.2) | 24(34.8) |
| Detention in a rehabilitation centre | | |
| Yes | 38(84.4) | 7(15.6) |
| No | 35(53.8) | 30(46.2) |
| Addiction counseling | | |
| Yes | 52(73.2) | 19(26.8) |
| No | 21(53.8) | 18(46.2) |

Table 4.11: Association between utilization of alternative interventions and MAT uptake

| Characteristic | OR (95% CI) | χ^2, df, P-value |
|--|---------------------|---|
| Detoxification with prescription medication | | |
| Yes | 6.652(1.863-23.747) | 10.324,1,0.001 |
| No | REF | |
| Religious intervention | | |
| Yes | 1.149(0.504-2.617) | 0.109,1,0.741 |
| No | REF | |
| Detention in a rehabilitation centre | | |
| Yes | 4.653(1.814-11.938) | 11.153,1,0.001 |
| No | REF | |
| Addiction counseling | | |
| Yes | 2.346(1.033-5.326) | 4.241,1,0.039 |
| No | REF | |

* *Odds ratio* † *Confidence interval*

4.8.4 Uptake of MAT and participants' attitude towards MAT

The relationships between the uptake of MAT and the participants' attitude towards MAT were also explored and the findings are presented in Table 4.8. Uptake of MAT was significantly higher in those who had a contrarian opinion when asked if MAT was akin to substituting heroin with another addiction (p=0.016). Those who responded in favour of the statement were found to be 65% less likely to have ever enrolled for MAT (OR 0.348 (95% CI 0.145-0.837)). The rest of the variables assessing attitudes towards MAT were not associated significantly with uptake of MAT.

Table 4.12: Participants' attitude towards MAT

| Characteristic | Ever enrolled | |
|---|----------------------|-------------------|
| | Yes (n, (%)) | No (n,(%)) |
| MAT is useful | | |
| Yes | 72(67.3) | 35(32.7) |
| No | 1(33.3) | 2(66.7) |
| It is substituting heroin with another addiction | | |
| Agree | 14(48.3) | 15(51.7) |
| Neutral/Disagree | 59(72.8) | 22(27.2) |
| Has dangerous side effects than heroin | | |
| Agree | 20(76.9) | 6(23.1) |
| Neutral/Disagree | 53(63.1) | 31(36.9) |
| Prevent spread of HIV and viral hepatitis | | |
| Agree | 38(70.4) | 16(29.6) |
| Neutral/Disagree | 35(62.5) | 21(37.5) |
| Bad for a person's health | | |
| Agree | 2(66.7) | 1(33.3) |
| Neutral/Disagree | 71(66.4) | 36(33.6) |
| Would improve the quality of life | | |
| Agree | 69(66.3) | 35(33.7) |
| Neutral/Disagree | 4(66.7) | 2(33.3) |
| People look down on those on MAT | | |
| Agree | 10(83.3) | 2(16.7) |
| Neutral/Disagree | 63(64.3) | 35(35.7) |
| Staff are discriminative | | |
| Agree | 9(52.9) | 8(47.1) |
| Neutral/Disagree | 64(68.8) | 29(31.2) |
| Encourage people to use drugs | | |
| Agree | 5(83.3) | 1(16.7) |
| Neutral/Disagree | 68(65.4) | 36(34.6) |
| The best way to treat heroin addiction | | |
| Agree | 72(69.2) | 32(30.8) |
| Neutral/Disagree | 1(16.7) | 5(83.3) |

Table 4.13: Association between uptake of MAT and participants' attitude towards MAT

| Characteristic | OR (95% CI) | χ^2, df, P-value |
|---|-----------------------|---|
| MAT is useful | | |
| Yes | 4.114(0.361-46.930) | 1.507,1,0.261 |
| No | REF | |
| It is substituting heroin with another addiction | | |
| Agree | 0.348(0.145-0.837) | 5.772,1,0.016 |
| Neutral/Disagree | REF | |
| Has dangerous side effects than heroin | | |
| Agree | 1.950(0.707-5.376) | 1.701,1,0.192 |
| Neutral/Disagree | REF | |
| Prevent spread of HIV and viral hepatitis | | |
| Agree | 1.425(0.643-3.159) | 0.763,1,0.382 |
| Neutral/Disagree | REF | |
| Bad for a person's health | | |
| Agree | 1.014(0.089-11.562) | 0.000,1,0.739 |
| Neutral/Disagree | REF | |
| Would improve the quality of life | | |
| Agree | 0.986(0.172-5.647) | 0.000,1,0.987 |
| Neutral/Disagree | REF | |
| People look down on those on MAT | | |
| Agree | 2.778(0.576-13.397) | 1.738,1,0.331 |
| Neutral/Disagree | REF | |
| Staff are discriminative | | |
| Agree | 0.510(0.179-1.455) | 1.623,1,0.203 |
| Neutral/Disagree | REF | |
| Encourage people to use drugs | | |
| Agree | 2.647(0.298-23.527) | 0.819,1,0.662 |
| Neutral/Disagree | REF | |
| The best way to treat heroin addiction | | |
| Agree | 11.250(1.263-100.224) | 7.022,1,0.016 |
| Neutral/Disagree | REF | |

* Odds ratio † Confidence interval

4.8.5 Association between uptake of MAT and health systems attributes

A significantly lower uptake of MAT was observed among those who had a rated the MAT eligibility criteria for PWID unfavorably (bad or very bad) as compared to those who rated it favourably (47% against 76% respectively, OR 0.278(95% CI 0.120-0.643), p=0.002). Favourable rating of the convenience of the operational hours of the MAT clinic by the respondents was associated with 2.6-fold increase in the odds of reporting having ever been on MAT (OR 2.646((95% CI 1.165-6.010), p=0.018). Other health systems attributes which were found to be significantly associated with higher uptake of MAT included; ease of access to the clinic (OR 2.520(95% CI 1.121-5.667), p=0.024), appropriate waiting time for those joining MAT (OR 3.202(95% CI 1.377-7.448), p=0.006) and rating of the cost of transport to/from the clinic as affordable (OR 3.163(95% CI 1.230-8.135), p=0.014) (Table 4.8).

Table 4.14: Health systems attributes

| Health system attribute | Ever enrolled | |
|--|---------------|-------------|
| | Yes (n, (%)) | No (n, (%)) |
| Transport costs to/from clinic (Sh.) | | |
| ≤ 100 | 31(57.4) | 23(42.6) |
| 100 – 200 | 21(72.4) | 8(27.6) |
| > 200 | 21(77.8) | 6(22.2) |
| MAT Clinic is: | | |
| (Very-) Far | 48(75.0) | 16(25.0) |
| Near | 25(54.3) | 21(45.7) |
| Rating of HCWs (in terms of being caring, friendly and listening) | | |
| Good | 50(66.7) | 25(33.3) |
| Average/Poor | 23(65.7) | 12(34.3) |
| Convenient clinic operational hours | | |
| Yes | 43(76.8) | 13(23.2) |
| No | 30(55.6) | 24(44.4) |
| Rating of waiting time to join MAT | | |
| Appropriate | 42(79.2) | 11(20.8) |
| Long | 31(54.4) | 26(45.6) |
| Rating of MAT eligibility criteria for PWID | | |
| Bad/Very bad | 18(47.4) | 20(52.6) |
| Good | 55(76.4) | 17(23.6) |
| Rating of cost of transport to/from the clinic | | |
| Affordable | 31(81.6) | 7(18.4) |
| Very-/expensive/unaffordable | 42(58.3) | 30(41.7) |

Table 4.15: Association between uptake of MAT and selected health systems attributes

| Health system attribute | OR (95% CI) | χ^2, df, P-value |
|---|--------------------|---|
| Transport costs to/from clinic (Sh.) | | |
| ≤ 100 | 0.385(0.134-1.107) | 3.250,1,0.071 |
| 100 – 200 | 0.750(0.222-2.538) | 0.215,1,0.643 |
| > 200 | REF | |
| MAT Clinic is: | | |
| (Very-) Far | 2.520(1.121-5.667) | 5.114,1,0.024 |
| Near | REF | |
| Rating of Health care attitude | | |
| Good | 1.043(0.447-2.434) | 0.010,1,0.922 |
| Average/Poor | REF | |
| Convenient clinic operational hours | | |
| Yes | 2.646(1.165-6.010) | 5.551,1,0.018 |
| No | REF | |
| Rating of waiting time to join MAT | | |
| Appropriate | 3.202(1.377-7.448) | 7.603,1,0.006 |
| Long | REF | |
| Rating of MAT eligibility criteria for PWID | | |
| Bad/Very bad | 0.278(0.120-0.643) | 9.384,1,0.002 |
| Good | REF | |
| Rating of cost of transport to/from the clinic | | |
| Affordable | 3.163(1.230-8.135) | 6.021,1,0.014 |
| Very-/expensive/unaffordable | REF | |

* *Odds ratio* † *Confidence interval*

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

This study reports a high uptake of MAT with two in three PWIH in a low-income urban settlement in Kenya reporting that they had ever enrolled for the therapy. Moreover, about four in five PWIH in the same settings who had ever enrolled for MAT were on MAT at the time of the study. The study related this high positive response with factors linked to the individual, characteristics and practices related to the use of heroin and health service utilization and found that gender, education levels and operating hours of the clinic were associated with uptake of MAT. To the best of our knowledge, our paper is among the pioneering ones in sub Saharan Africa (SSA) to describe PWIH and document factors associated with utilization of MAT in this group. As the available body of evidence on these factors is, thus, scarce in SSA, better understanding of patterns of injection drug use and utilization of harm reduction services in emergent markets is needed. This way, the benefits accrued from programs involved in treatment and in promoting pertinent national policies amenable to local contexts can be optimized.

5.1.1 Proportion of uptake of MAT

In the current study, two in three PWIH were found to have ever been on MAT. The proportion is lower than what was reported in a research done in Britain and Northern Ireland where the uptake of MAT was 90%. It is also slightly lower compared to the uptake in Australia (69%) (Mathers *et al.*, 2010). The higher levels of uptake could be attributed, at least in part, to the fact that the harm reduction interventions were introduced earlier in the developed countries. The nascent nature of the MAT programs in SSA countries, including Kenya, implies that they are still learning the best ways of

recruiting and retaining drug users in their settings which may be different from the developed world contexts in which the preliminary research on MAT was conducted. On the contrary, the proportion of PWIH on MAT in the present study is much higher than the averaged proportion for developing countries which is estimated to be 3% (Peterson *et al.*, 2013). Perhaps, this disparity could be due to the averages being derived from figures from different settings such as rural and urban, high and low income settings and also the nature of the MAT providers (public versus private) among others. The estimates from the current study may be generalizable in a not-for-profit healthcare provider's set-up. The incentivization of services associated with such enterprises may be the primary reason for the observed high uptake of MAT. Also, the present study reported a markedly higher uptake compared to a study conducted in Malaysia which found that 18.7% of study participants had previous experience with MAT (Vijay *et al.*, 2015). Similarly, a research on access to MAT in low- and middle-income countries reported lower proportions of previous enrollment for MAT with the average enrollment being 37% (Lawrinson *et al.*, 2008). The huge difference between our estimate and what would be expected in the Kenyan context based on prior studies could also be due to the fact that present survey was conducted in a single low income settlement in an urban setting and, thus, may not be representative of the entire Kenyan context.

5.1.2 Attitude towards MAT

Upon evaluation of the study respondents' attitude towards MAT, it was found that a majority of the respondents (97%) had a positive attitude that MAT was useful in addressing heroin dependence. Contrary to these study findings which reported higher levels of favorable attitudes and perception towards MAT, a Malaysia study found that 63.3% of PWID believed that MAT was useful in addressing heroin addiction (Vijay *et al.*, 2015). Another study conducted in the same country showed that 51% of the study subjects said that MAT was helpful (Bachireddy *et al.*, 2011). The disparities in the

findings in these studies could probably be explained by the differences in the populations studied and the corresponding settings. For instance, the team led by Bachireddy focused on HIV–positive incarcerated subjects (Bachireddy *et al.*, 2011).

One in four respondents was found to have a biased attitude towards MAT as they viewed it as another addiction. These findings contradict those of a Malaysian study which reported a higher proportion of PWID (78.7%) who felt that substitution therapy using methadone was ‘merely replacing one addiction with another’ (Vijay *et al.*, 2015).

In this study, about 4 in 5 study participants disagreed with the statement the MAT clinic staff were discriminative. These findings are in agreement with those of a research done in Malaysia whereby 67.8% and 66.7% of respondents negated the statement that methadone and buprenorphine-providers, respectively, treated clients in a poor manner (Vijay *et al.*, 2015).

5.1.3 Factors associated with the uptake of MAT

Lower uptake levels of MAT in men noted in this study is consistent with findings in Nairobi that found that, proportionately, more women compared to men had ever received drug treatment to address heroin addiction (Oguya 2014). Women are generally more receptive to new health interventions relative to men with reports positive health seeking behavior than men (Oguya 2014); (Pinkham, Stoicescu and Myers, 2012). In addition, the study found that female PWID were more motivated to enroll for MAT especially if their partner was already enrolled for MAT or if they were pregnant. Indeed, the two factors have been documented as the central reason for MAT uptake in women. Conversely, punitive policies that separate women who use drugs from their children can deter pregnant women and mothers from accepting treatment (Pinkham, Stoicescu and Myers, 2012). In this study, we posit that favourable guidelines in Kenya, for instance, all women using heroin are eligible to enroll for MAT regardless of their mode of using heroin, duration of using heroin, health status and support structure may

explain the higher proportion of women under MAT (MOH, 2013). These findings perhaps point out the need to have the harm reduction services' provision models that are responsive to the well-documented diversity of uptake of healthcare interventions among the different gender. For instance, the eligibility criteria should be reviewed to enable quicker enrollment of men for MAT. Also, community-based outreach programs and peer-based approaches could be useful approaches for reaching men, particularly if they are

The study found lower uptake of MAT in PWIHs with low literacy levels (primary school and no formal education). This agrees with a Kenyan study that found that educated heroin users are more likely to have good health seeking behavior and engaged in less risky behaviours (Sylvia *et al.*, 2017). It is expected that people with higher educational attainment are more likely to have positive health seeking behavior and are more likely to make informed decisions on matters concerning their health than their less educated counterparts. Low income settlements are normally characterized by socioeconomic inequalities and a young, mobile population. Besides, given the early starting age of substance use and the youthfulness of PWIH, it might be argued that injectable heroin use may cause untimely exit from the educational system. Subsequently, in a reinforcing positive feedback loop, lack of education becomes a constraint to the acquisition of requisite skills for getting stable income that then may be associated with heroin use (Sylvia *et al.*, 2017); (MOH 2013).

Marital status was a significant predictor of uptake of MAT with the uptake being lowest among people in marital singlehood and highest among married people. This is in concordance with a Kenyan Coast study which found that marital status had a significant influence on heroin users' predisposition to seek professional help to address heroin addiction (Sylvia *et al.*, 2017). It is possible that the social support emanating from being married may provide the impetus for enrolling for MAT in this group. The poor social support structure (being unmarried) and the high rates of unemployment need to be

considered when implementing harm reduction programs since they have been documented as risk factors for relapse (Deveau, Barry and Beckerleg, 2009). Generally, this corroborates findings from studies on harm reduction interventions which show that uptake is enhanced by having a supportive social structure. For instance, an Australian study found that uptake of HCV treatment, which is also a harm reduction intervention, was associated with living with the support of family (Alavi, 2013)

Injecting heroin for a longer duration was associated with higher uptake of MAT. This may be due to the intense experiences of the adverse effects of injecting heroin including, but not limited to, those that are socioeconomic and physiological in nature. The Kenyan MAT eligibility criteria favoured PWID who had injected heroin for more than 1 year before it was reviewed in 2017 and this may explain this significance. In Georgia, MAT patients need to have used drugs for more than three years and be injecting for at least one year before enrollment to MAT (Todadze and Lezhava, 2008). In our study, increment in uptake of MAT was observed with increased daily frequencies of injecting heroin, quite in contrast with Digiusto and Treloar (2007) who found that higher frequency of injecting practices is associated with more severe dependence and a lower uptake of MAT. Probably the explanation behind this observation is that increasing daily dosage/frequency resulted in an elevation of negative experiences from health, social or financial dimensions either singly or as combinations. We further argue that just like in the frequency of injectable heroin use, the significant association between recent poly-drug use and uptake of MAT could be due to the resultant upsurge in undesired effects (health, social, legal, financial) and hence the desire to change for the better. These hypotheses, however, need to be authenticated in longitudinal studies.

Higher uptake of MAT was observed among PWIH who rated the operational hours of the clinic offering MAT as convenient. Similarly, a research on access to HIV management for PWID in Kenya reported time as a structural barrier to access of

healthcare services (Guise *et al.*, 2016). The inconveniences associated with the hours of operation could perhaps be linked to the opportunity costs involved, such as having to choose between going to the clinic and using that time for gainful labour. Also the inconvenience of hours of operations may be reflection of the direct and indirect costs involved in accessing the health facility, for example, the timing of heavy traffic in the city, and the associated cost in terms of money and time spent. This may also be associated with the fears and experiences of stigma from the community, health care providers or even other clients seeking services in the same facility. There is a need to explore the issue further and, more importantly, put in place mitigation measures. For instance, adjustments of MAT clinic routines and extending hours of operation including giving priority to IDUs within queues when accompanied by an outreach worker and provision of transport by outreach harm reduction projects to the MAT clinic. In line with this, adaptations of MAT clinics, even those providing health services to the general public, in a manner that could further support access of services for PWID has been recommended (Beyrer *et al.*, 2011) This could entail extending hours of operation, shortening the waiting time *et cetera*. Similar observations were also made in a case study conducted in Kenya that noted that MAT services were limited due to the low number of delivery sites and also staff shortages meaning that there was always a long waiting list (Hyde, 2016). Moreover, some potential clients are unable to travel the long distance every day for their dose.

Access to the MAT Clinic was associated with MAT uptake. Ayon *et al.*, (2018) also reported accessibility as a barrier in accessing conventional health services. To mitigate this effect, having outreach programs may be initiated to supplement the health facility-based programs and improve access to MAT. Provision of transport or transport refunds may also be a means to circumvent this barrier to utilization of MAT. Other health systems barriers included inappropriateness of the waiting time to join MAT, unfavourable MAT eligibility criteria and cost of transport to/from the clinic being

unaffordable. These latter findings are not necessarily surprising, and they build on existing literature regarding barriers of access to health services among drug users in general (Ayon *et al* 2017, Guise *et al* 2016; Mlunde *et al.*, 2016; Nambiar, Stooove, & Dietze, 2014).

The findings from the present survey have potentially substantial implications on policy and practice with regard to PWIH. First, the sociodemographic characteristics of the PWIH must be borne in mind when designing and implementing interventions targeting this key population. For instance, it has been shown that drug users with low literacy, often find it difficult to understand concepts such as the disease concept of addiction, craving and denial (Deveau *et al.*, 2006). Thus, given the low literacy levels of PWIH, programs aimed at creating awareness and promoting uptake of interventions must be tailored to match the level of education of the targeted population. Moreover, innovative approaches that ensure convenient operating hours to PWID while offering harm reduction services need to be explored to optimize the uptake and benefits of these important interventions. This may include, among others, offering some or all the services through outreach programs, community-based approaches and integrating the services in the conventional/routine services offered in health facilities.

5.2 Study limitations

This study is not without limitations. Generalizability of the findings could be limited by the non-random sampling method that was utilized in the study. The cross-sectional nature of the study and the small sample size limited the power to detect statistically significant associations based on multivariate analyses. The study also relied on self-reported data on enrollment for MAT which could be a source of bias in our results. In spite of the aforementioned constraints, this study sheds light on the barriers and possible facilitators of MAT uptake in the city of Nairobi which can inform and/or enrich the implementation of the recently unveiled harm reduction programs in Kenya.

This research also suggests a shift in paradigms of injectable heroin use with poly-drug use being a fairly common habit.

5.3 Conclusions

The objective of this study was to establish the uptake of MAT, attitude towards MAT and associated factors among PWIH in Mathare low income settlements.

The study reveals that the proportion of PWIH who had not enrolled for MAT was 34% with a lower uptake of MAT among men and PWIH. This shows that a significant number of PWIH who have not accessed MAT are at a higher risk of HIV and viral hepatitis transmission which is a public health concern.

This study identified a favorable attitude towards MAT; that it the best way to address heroin addiction and improves quality of life. A positive attitude towards health workers working in MAT clinic and MAT being a substitution therapy to reduce HIV and viral hepatitis transmission provide opportunities to accelerate the uptake of MAT and adherence to MAT. A significant number who disagreed that MAT has dangerous side effects and reduces HIV and viral transmission (39%) possess a barrier in accessing MAT which is a public health concern.

Lastly, this study identified modifiable individual and health systems factors associated with high MAT uptake in low income urban settlers. These modifiable individual factors included; high frequency of injection, higher number of years using injected heroin, low level of education, history of seeking alternative means of addressing heroin dependence. The low uptake of MAT among those who have injected heroin for few times in a day or for few years is a public health concern because it puts them at a risk of contracting HIV and viral hepatitis. The health system factors that created barriers in accessing MAT included; hours of MAT clinic operation, a rigid eligibility criteria, waiting time to join MAT, cost of transport and distance to MAT clinic. Additionally,

dissatisfaction with the eligibility criteria, cost of transport and hours of operation of the MAT clinic were significant predictors of higher uptake of MAT among PWIH. This is of public health importance because a rigid eligibility criteria, hours of operation of the MAT clinic and the long waiting time makes MAT inaccessible and unavailable putting PWIH at risk of contracting HIV and viral hepatitis. The distance high cost of transport and distance to MAT clinic may prevent PWIH from accessing MAT and this of public health importance.

5.4 Recommendations

5.4.1 Study recommendations

In order to enhance the uptake of MAT and other harm reduction services, the Ministry of Health and Non- governmental organization should explore approaches that will address the disparities observed with respect to numbers and frequency of heroin injection, sex and literacy levels of the PWIH. These may include gender sensitive programming as well as reviewing the current information, education and communication materials to match the literacy levels of the targeted audience.

The Ministry of Health in National and County government should review the policy guidelines. This includes the eligibility criteria for MAT and requirement to enroll for MAT through a drop in center so as to promote and enhance satisfaction of PWIH seeking care in the health facilities offering MAT. In addition, ensuring that the hours of operation are convenient to the targeted clientele and that MAT services are accessible to PWIH.

The Ministry of Health in National and County government should open and scale up other MAT clinics in the all sub counties in Nairobi to reduce cost of transport and the long waiting list. Integrating MAT services in Harm reduction programs in the Drop in center can reduce the long waiting list to enroll for MAT and cost of transport.

5.4.2 Recommendations for areas for further research

1. The ministry of health should conduct more research studies in high and middle income settlements in Nairobi to determine the uptake, attitude and factors associated with uptake of MAT.
2. The ministry of health and its partner to conduct a national survey in the whole country to determine the uptake, attitude and factors associated with uptake of MAT. These regions vary geographically, culturally, politically and economically.

REFERENCES

- Ambekar, A., Rao, R., Pun, A., Kumar, S., & Kishore, K. (2013). The trajectory of methadone maintenance treatment in Nepal. *International Journal of Drug Policy*, 24(6), e57-e60.
- Armstrong, G., Kermode, M., Sharma, C., Langkham, B., & Crofts, N. (2010). Opioid substitution therapy in manipur and nagaland, north-east india: operational research in action. *Harm reduction journal*, 7(1), 29.
- Astell-Burt, T., Flowerdew, R., Boyle, P. J., & Dillon, J. F. (2011). Does geographic access to primary healthcare influence the detection of hepatitis C?. *Social Science & Medicine*, 72(9), 1472-1481
- Boltaev, A. A., Deryabina, A. P., Kusainov, A., & Howard, A. A. (2012). Evaluation of a pilot medication-assisted therapy program in Kazakhstan: successes, challenges, and opportunities for scaleup. *Advances in preventive medicine*, 2012.
- Centers for disease control and prevention (CDC Kenya). (2015) • Kenya Annual Report 2015. Retrieved from https://www.cdc.gov/globalhealth/countries/kenya/pdf/cdc_kenya2015report.pdf
- Center, L. A. (2015). *Confronting an Epidemic: The Case for Eliminating Barriers to Medication-Assisted Treatment of Heroin and Opioid Addiction*. Retrived from <http://www.lac.org/>
- Center, L. A. (2011). *Legality of denying access to medication assisted treatment in the criminal justice system*. Retrived from <http://www.lac.org/>
- Cicero, T. J., Ellis, M. S., & Kasper, Z. A. (2017). Increased use of heroin as an initiating opioid of abuse. *Addictive behaviors*, 74, 63-66.

- Connock, M., Juarez-Garcia, A., Jowett, S., Frew, E., Liu, Z., Taylor, R. J., ... & Burls, A. (2007). Methadone and buprenorphine for the management of opioid dependence: a systematic review and economic evaluation. *In NIHR Health Technology Assessment programme: Executive Summaries. NIHR Journals Library.*
- Cumming, C., Troeung, L., Young, J. T., Kelty, E., & Preen, D. B. (2016). Barriers to accessing methamphetamine treatment: A systematic review and meta-analysis. *Drug and alcohol dependence, 168*, 263-273.
- Digiusto, E., & Treloar, C. (2007). Equity of access to treatment, and barriers to treatment for illicit drug use in Australia. *Addiction, 102*(6), 958-969.
- Drucker, E., Lurie, P., Wodak, A., & Alcabes, P. (1998). Measuring harm reduction: the effects of needle and syringe exchange programs and methadone maintenance on the ecology of HIV. *AIDS-London-Current Science Then Rapid Science Publishers Then Lippincott Raven-, 12*, S217-S230.
- Davern, M., McAlpine, D., Beebe, T. J., Ziegenfuss, J., Rockwood, T., & Call, K. T. (2010). Are lower response rates hazardous to your health survey? An analysis of three state telephone health surveys. *Health services research, 45*(5p1), 1324-1344.
- Gelmon, L. (2009). *Kenya HIV prevention response and modes of transmission analysis*. Nairobi: National AIDS Control Council.
- Gilbert, L., Primbetova, S., Nikitin, D., Hunt, T., Terlikbayeva, A., Momenghalibaf, A., ... & El-Bassel, N. (2013). Redressing the epidemics of opioid overdose and HIV among people who inject drugs in Central Asia: the need for a syndemic approach. *Drug and Alcohol Dependence, 132*, S56-S60.

- Goldstein, M. F., Deren, S., Kang, S. Y., Des Jarlais, D. C., & Magura, S. (2012). Evaluation of an alternative program for MMTP drop-outs: impact on treatment re-entry. *Drug and alcohol dependence*, 66(2), 181-187.
- Gowing, L., Farrell, M., Bornemann, R., Sullivan, L., & Ali, R. (2008). Substitution treatment of injecting opioid users for prevention of HIV infection. *Cochrane Database Syst Rev*, 2.
- Guise, A., Dimova, M., Ndimbii, J., Clark, P., & Rhodes, T. (2015). A qualitative analysis of transitions to heroin injection in Kenya: implications for HIV prevention and harm reduction. *Harm reduction journal*, 12(1), 27.
- Habitat, U. N. (2006). State of the World's Cities. *The millenium development goals and urban sustainability*. London: Earthscan.
- Hall, G., Neighbors, C. J., Iheoma, J., Dauber, S., Adams, M., Culleton, R., ... & Morgenstern, J. (2014). Mobile opioid agonist treatment and public funding expands treatment for disenfranchised opioid-dependent individuals. *Journal of substance abuse treatment*, 46(4), 511-515.
- Horton, R., & Das, P. (2010). Rescuing people with HIV who use drugs. *The Lancet*, 376(9737), 207.
- Ikiara, M. M., (2016). Varieties of drug abuse and effects among Injecting Drug Users in Nairobi county: a case study of SAPTA/Global fund harm reduction drop-in treatment center. Retrieved from <http://erepository.uonbi.ac.ke:8080/handle/11295/100195?show=full>
- Jones, C. M., Campopiano, M., Baldwin, G., & McCance-Katz, E. (2015). National and state treatment need and capacity for opioid agonist medication-assisted treatment. *American Journal of Public Health (ajph)*.

- Jürgens, R., Csete, J., Amon, J. J., Baral, S., & Beyrer, C. (2010). People who use drugs, HIV, and human rights. *The Lancet*, 376(9739), 475-485
- Kim, B. J., & Harley, D. A. (2019). Needle and Syringe Programs in Rural Areas: Addressing the Intravenous Drug Use Epidemic. *Rehabilitation Research, Policy, and Education*, 33(1), 56-64.
- Knudsen HK, Abraham AJ, Roman PM. (2011). Adoption and implementation of medications in addiction treatment programs. *J Addict Med* 2011;5:21-7.
- Kourounis, G., Richards, B. D. W., Kyprianou, E., Symeonidou, E., Malliori, M. M., & Samartzis, L. (2016). Opioid substitution therapy: lowering the treatment thresholds. *Drug and alcohol dependence*, 161, 1-8.
- Latypov, A. (2010). Opioid substitution therapy in Tajikistan: Another perpetual pilot?. *International Journal of Drug Policy*, 21(5), 407-410.
- Lawrinson, P., Ali, R., Buavirat, A., Chiamwongpaet, S., Dvoryak, S., Habrat, B., ... & Newcombe, D. (2008). Key findings from the WHO collaborative study on substitution therapy for opioid dependence and HIV/AIDS. *Addiction*, 103(9), 1484-1492.
- Lin, C. K., Hung, C. C., Peng, C. Y., Chao, E., & Lee, T. S. H. (2015). Factors associated with methadone treatment duration: a cox regression analysis. *PloS one*, 10(4), e0123687.
- Mathers, B. M., Degenhardt, L., Ali, H., Wiessing, L., Hickman, M., Mattick, R. P., & Strathdee, S. A. (2010). HIV prevention, treatment, and care services for PWIDs: a systematic review of global, regional, and national coverage. *The Lancet*, 375(9719), 1014-1028.

- Mathieson, K. (2014). Making Sense of Biostatistics: Types of Probability Sampling. *Journal of Clinical Research Best Practices, 10(9)*.
- Ministry Of Health, (2013). *Standard Operating Procedures For Medically Assisted Therapy For People Who Use Drugs*. Kenya.
- Muongano Support Trust, University of Nairobi and University of California (2011). Mathare Valley, Nairobi, Kenya. Collaborative Upgrading Plan : a Collaboration Between Muongano Support Trust, University of Nairobi, Dept. of Urban and Regional Planning, UC Berkeley, Dept. of City and Regional Planning. *University of California, Berkeley, 2012*
- National Institute on Drug Abuse (2017). What is Heroin? Retrieved from <https://www.drugabuse.gov/publications/drugfacts/heroin>
- Nosyk, B., Marshall, B. D. L., Fischer, B., Montaner, J. S. G., Wood, E., & Kerr, T. (2012). Increases in the availability of prescribed opioids in a Canadian setting. *Drug and alcohol dependence, 126(1-2)*, 7-12.
- Okal, J., Geibel, S., Muraguri, N., Musyoki, H., Tun, W., Broz, D., ... & Raymond, H. F. (2013). Estimates of the size of key populations at risk for HIV infection: men who have sex with men, female sex workers and injecting drug users in Nairobi, Kenya. *Sex Transm Infect, sextrans-2013*.
- Open Society Foundation: (2008). Barriers to Access: Medication-Assisted Treatment and Injection-Driven HIV Epidemics. *Public Health fact sheet*
- Patten, M. L. (2016). *Questionnaire research: A practical guide*. Routledge.

- Petersen, Z., Myers, B., Van Hout, M. C., Plüddemann, A., & Parry, C. (2013). Availability of HIV prevention and treatment services for people who inject drugs: findings from 21 countries. *Harm reduction journal*, *10*(1), 13.
- Reidenberg, M. M. (2010). Essential Medicines for Everybody in the World: The World Health Organization Essential Medicines Program. *Public Health in the 21st Century [3 volumes]:[Three Volumes]*, 109.
- Roberts, J., Annett, H., & Hickman, M. (2010). A systematic review of interventions to increase the uptake of opiate substitution therapy in injecting drug users. *Journal of Public Health*, *33*(3), 378-384.
- Robles, R. R., Reyes, J. C., Colón, H. M., Sahai, H., Marrero, C. A., Matos, T. D., ... & Shepard, E. W. (2004). Effects of combined counseling and case management to reduce HIV risk behaviors among Hispanic drug injectors in Puerto Rico: a randomized controlled study. *Journal of substance abuse treatment*, *27*(2), 145-152.
- Saha, T. D., Kerridge, B. T., Goldstein, R. B., Chou, S. P., Zhang, H., Jung, J., ... & Hasin, D. S. (2016). Nonmedical prescription opioid use and DSM-5 nonmedical prescription opioid use disorder in the United States. *The Journal of clinical psychiatry*, *77*(6), 772.
- Setia MS (2016). Methodology series module 5: Sampling strategies. *Indian J Dermatol* *2016;61:505-9*
- Sedgwick, P. (2014). Cross sectional studies: advantages and disadvantages. *Bmj*, *348*, g2276.
- Sharkey, K. M., Kurth, M. E., Anderson, B. J., Corso, R. P., Millman, R. P., & Stein, M. D. (2010). Obstructive sleep apnea is more common than central sleep apnea in

- methadone maintenance patients with subjective sleep complaints. *Drug and alcohol dependence*, 108(1-2), 77-83.
- Strathdee, S. A., Ricketts, E. P., Huettner, S., Cornelius, L., Bishai, D., Havens, J. R., and Latkin, C. A. (2010). Facilitating entry into drug treatment among injection drug users referred from a needle exchange program: Results from a community-based behavioral intervention trial. *Drug and alcohol dependence*, 83(3), 225-232.
- Strathdee, S. A., Hallett, T. B., Bobrova, N., Rhodes, T., Booth, R., Abdool, R., & Hankins, C. A. (2010). HIV and risk environment for injecting drug users: the past, present, and future. *The Lancet*, 376(9737), 268-284.
- Straus, S. E. (2005). Evidence-based medicine: how to practice and teach EBMi Sharon E. Straus...[et al.].
- Tilson, H., Aramrattana, A., Bozzette, S., Celentano, D., Falco, M., Hammett, T., ... & Schottenfeld, R. (2007). Preventing HIV infection among injecting drug users in high-risk countries: an assessment of the evidence. Washington, DC: *Institute of Medicine*.
- Tran, B. X., Ohinmaa, A., Duong, A. T., Do, N. T., Nguyen, L. T., Mills, S., ... & Jacobs, P. (2012). Cost-effectiveness of methadone maintenance treatment for HIV-positive drug users in Vietnam. *AIDS care*, 24(3), 283-290.
- Tun, W., Sheehy, M., Broz, D., Okal, J., Muraguri, N., Raymond, H. F., ... & Geibel, S. (2015). HIV and STI prevalence and injection behaviors among people who inject drugs in Nairobi: Results from a 2011 bio-behavioral study using respondent-driven sampling. *AIDS and Behavior*, 19(1), 24-35.
- United Nations Office on Drugs and Crime (2015), World Drug Report. *United Nations publication, Sales No. E.15.XI.6*.

- Van Boekel, L. C., Brouwers, E. P., Van Weeghel, J., & Garretsen, H. F. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug and alcohol dependence, 131*(1), 23-35.
- Wayne Hall, Richard P. Mattick, John B. Saunders and Alex Wodak (2009). Rapid opiate detoxification treatment. *Drug and alcohol review, 16*(4), 325
- Weber, R., Huber, M., Rickenbach, M., Furrer, H., Elzi, L., Hirschel, B., ... & Ledergerber, B. (2009). Uptake of and virological response to antiretroviral therapy among HIV- infected former and current injecting drug users and persons in an opiate substitution treatment programme: the Swiss HIV Cohort Study. *HIV medicine, 10*(7), 407-416.
- United Nations Office on Drugs, & Crime. (2010). *World drug report 2010*. United Nations Publications.
- Vijay, A., Bazazi, A.R., Yee, I., Kamarulzaman, A., Altice, F.L. (2015). Treatment readiness, attitudes toward, and experiences with methadone and buprenorphine maintenance therapy among people who inject drugs in Malaysia. *Journal of substance abuse treatment, 54*, 29-36.
- Walsh, N., Verster, A., Rodolph, M., & Akl, E. A. (2014). WHO guidance on the prevention of viral hepatitis B and C among people who inject drugs. *International Journal of Drug Policy, 25*(3), 363-371.
- World Health Organization(2012). Technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users, 2012 revision. *Geneva: WHO*.

- WHO, U. (2010). Technical Guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users. *Geneva: WHO*.
- World Health Organization. (2014). *Policy brief: Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations* (No. WHO/HIV/2017.05). *Geneva: WHO*
- Yuanzao. L *et al.*, (2009). Barriers to Uptake and Continuation of Substitution Methadone Treatment in Yunnan Province, China. U.S. Agency for International Development. Retrieved from HPI Web site: www.healthpolicyinitiative.com RTI Web site: www.rti.org
- Zaller, N. D., Bazazi, A. R., Velazquez, L., & Rich, J. D. (2009). Attitudes toward methadone among out-of-treatment minority injection drug users: implications for health disparities. *International journal of environmental research and public health*, 6(2), 787-797.

APPENDICES

APPENDIX I: STRUCTURED QUESTIONNAIRE

STRUCTURED QUESTIONNAIRE FOR UPTAKE OF MAT IN UPTAKE OF MEDICALLY ASSISTED THERAPY AMONG PEOPLE WHO INJECT HEROIN IN MATHARE, NAIROBI COUNTY

INSTRUCTIONS: This questionnaire was administered to all respondents who have passed the screening and have consented to participate in the study. The questionnaire interview is to be carried out in an environment which ensures privacy and confidentiality.

SUBJECT IDENTIFICATION

Date: _____

Interviewer's Name: Code:

.....

Section A: Background characteristics

First, I would like to ask you a few questions on your background, including information on your age, education, jobs and drug use information.

1)Age years

2)Sex.

a)Male

b)Female

3) Marital status

- a) Single
- b) Married
- c) Separated/ Divorced

4) Religion

- a) Muslim
- b) Christian
- c) Hindu
- d) Other (specify)

5) Highest level of education

- a) Tertiary
- b) Secondary
- c) Primary
- d) Never gone to school

6) Employment status

- a) Employed (public/private sector etc)
- b) Self employed
- c) Unemployed

Section B: Drug Use information

7)How many years have you injected heroin?

8)How many times per day do you inject heroin?

9)Have you ever shared needles?

a)Yes

b)No

10)Which of the following drugs have you used in the last one month?

a)Alcohol

b)Marijuana

c)Cocaine

d)Tobacco

e)I don't use drugs

f)Pills

11)Have you ever tried quitting using heroin?

a)Yes

b)No

Section C: Uptake and awareness of MAT

12) Have you ever enrolled for MAT?

a) Yes

b) No

13) If yes, are you currently in MAT?

a) Yes

b) No

14) If yes (Q. 12), what motivated you to enroll for MAT? Tick all that apply

15) To stop injecting and other risky behaviors

a) To get HIV / TB treatment

b) To quit using heroin

c) To lead a productive life

d) Influenced by a friend / relative

e) Received information about MAT

f) Others (specify).....

16) If No (Q. 12), why haven't you enrolled for MAT? Tick all that apply

a) No service exists

b) MAT clinic is far

- c)Inconvenient operational hours
- d)MAT clinic is very unfriendly to PWID
- e)Afraid of arrest or harassment by authorities
- f)I don't satisfy the MAT inclusion criteria
- g)Long waiting list to join MAT
- h)Methadone side effects
- i)I am not ready

17)Have you ever tried using the following alternative approaches to substance dependence?

| | | Yes | No |
|---|--|-----|----|
| a | Detoxification with prescription medication | | |
| b | Religious intervention | | |
| c | Detention in community rehabilitation center | | |
| d | Addiction counseling | | |

18)Does your family support you in seeking MAT?

- a)Yes
- b)No

Attitudes towards MAT

19)In your own opinion, do you think MAT is useful?

- a)Yes
- b)No

c)If not, specify.....

20)The following is true about MAT

| | | Agree | Disagree | Neither agree or disagree |
|---|--|-------|----------|---------------------------|
| a | | 1 | 2 | 3 |
| b | It is substituting heroin with another addiction | | | |
| c | Has dangerous side effects than heroin | | | |
| d | Prevent spread of HIV and viral hepatitis | | | |
| e | Bad for a person's health | | | |
| d | Would improve the quality of life | | | |
| e | People look down on those on MAT | | | |
| f | MAT clinic staff are discriminative | | | |
| g | Encourage people to use drugs | | | |
| h | The best way to treat heroin addiction | | | |

Health system attributes

21)How far is your home from the nearest MAT clinic?

a)Very far

b)Far

c)Near

22) How can you rate the health care workers in the MAT clinic in terms of being caring, friendly and listening?

a)Good

b)Average

c)Poor

23) Are the MAT operational hours convenient with you?

a) Yes

b) No

24) How would you rate the waiting time to join MAT?

a) Appropriate

b) Long

c) How would you rate the MAT eligibility criteria for PWID?

d) Very good

e) Good

f) Bad

g) Very bad

25) What is the cost of transport (round trip) from where you reside to the MAT clinic?

.....

26) How would you rate the above cost of transport (round trip) from where you reside to the clinic?

a) Cost - effective

b) Expensive

APPENDIX 2: IDU SCREENING QUESTIONNAIRE

Town: _____ Site _____

Seed no. _____ Coupon no. _____
Date _____

1. Code : _____

2. Age: _____ in years

3. Race / Ethnic Group: _____

4. Home Village: _____

5. Highest level of Education:

- No Education 0
- Primary School
- Secondary School
- College / University and above

6. How old were you when you first used heroin to get high? _____ Years old

- No (end here)
- Yes (continue to number 8)
- Refused 7 (end here if refuses to state whether used heroin)

7. During your lifetime have you ever injected heroin

- No (end here)
- Yes (continue to number 9)
- Refused 7 (end here if refuses to state whether ever injected)

8. When was the last time you injected drugs? _____ (days or months or years)

9. Ask the respondent to physically show any visible injection tracks:

- No marks
- Some marks
- Numerous marks 2

10. Are you under Medically Assisted Therapy?

- Yes
- No

If the respondent is not under MAT and is confirmed to be currently INJECTING heroin for the last 6 months by his statements of confirmation and by clear identification of injecting track marks then accept him into the study and administer the informed consent

APPENDIX 3: INFORMED CONSENT FORM -PWID

STUDY TITLE: UPTAKE OF MEDICALLY ASSISTED THERAPY AMONG PEOPLE WHO INJECT HEROIN IN MATHARE LOW INCOME SETTLEMENTS, NAIROBI COUNTY

Lead Investigator

George Macharia Wambugu

Mobile phone number: 0726137547

Supervisors

Dr. John Gachohi,

Jomo Kenyatta University of Agriculture and Technology

Dr. Joseph Mutai

Kenya Medical Research Institute - Institute of Infectious Diseases and Tropical Medicine

Introduction: Medically assisted therapy is the use of prescription medications for the management of persons that are dependent on heroin (and other opioids) and have used heroin / opioids for an extended period. Medically Assisted Therapy aims to reduce the risk of contracting or transmitting HIV and viral hepatitis by substituting non-injecting drugs for the injected substance and this switches users from “black market” drugs to legal drugs dispensed under the care of a health professional, therefore minimizing the risk of overdose and other medical complications. By December 2016 only less than 1% of People who inject Heroin in Nairobi had been enrolled for Medically Assisted

Therapy. This study seeks to determine the level and factors contributing to this poor uptake of Medically Assisted Therapy among People who inject Heroin.

Purpose of study: I was conducting a study on uptake of medically assisted therapy among people who inject heroin in Mathare low income settlements, Nairobi County. This study will provide information on barriers and motivational factors on uptake of Medically Assisted Therapy in Mathare low income settlements. The study will therefore provide strategies that will help improve the uptake of Medically Assisted Therapy among people who inject heroin and those who dropped out of MAT so as to achieve the primary goal of reduction and management of HIV and viral hepatitis.

People who inject Heroin was interviewed individually and by taking part in this study you will help your health caregivers to provide the best care to you and also institute policies that will help take care of you and other People who inject heroin on Medically Assisted Therapy.

Benefits: No direct benefits or payments, however, you will have a chance to raise concerns you may have regarding Medically Assisted Therapy which was addressed. In addition, the data collected will help the Stakeholders institute measures aimed at improving uptake of Medically Assisted Therapy which will prevent spread of HIV and viral hepatitis thus improving the quality of life

Risks: There are no known risks of you taking part in this study. Refusal to participate will in no way endanger your treatment.

Voluntariness: Participation in this study was fully voluntary. There was no financial rewards to you for participating in the study. One is free to participate or withdraw from the study at any point.

Procedure: The study was conducted using a questionnaire and Key informants interview.

Privacy and Confidentiality: I will keep all the information about you confidential, your name will not be used during the study, questionnaires was numbered instead. Only study personnel will have access to the data collected, and data was kept in a secure place.

Problems or Questions: If you ever have any questions about the study or about the use of the results you can contact me (**George Wambugu**) by calling / texting, 0726137547.

If you have any questions on your rights as a research participant you can contact the Kenyatta National Hospital Ethics and Research Committee (KNH- ESR) via phone: (254-020) 2726300 or email: uonknh_erc@uonbi.ac.ke

Respondent's agreement

I.....
.....hereby consent to participate in the study entitled Uptake of Medically Assisted Therapy among People who inject heroin in Mathare low income settlements, Nairobi County . The nature of the study has been explained to me and I understand that my participation or refusal to participate will not in any way affect the course of my enrollment for Medically Assisted Therapy.

I have been assured that no risk to my health or care will ensue during the course of my participation in the study

Signed.....Date.....
.....

I confirm that I have fully explained to the participant the nature and scope of the study and the contents of this consent form in detail. I confirm that no coercion or remuneration, monetary or otherwise has been offered to the participant.

Interviewer.....signature.....Date
.....

SWAHILI VERSION OF CONSENT FORM

STUDY TITLE: MATUMIZI YA TIBA MBADALA YA AFYUNI KWA WATU WANAJOJIDUNGA HEROINI MATHARE, KAUNTI LA NAIROBI

Kuanzishwa: Tiba mbadala ya afyuni (medical assisted therapy) ni matibabu yaliyotengenezwa maalumu kwa ajili ya watu wanaojidunga heroini. Ni dawa ambayo watumiaji wa heroini wanaweza kunywa kila siku ili kukomesha madhara ya uondoaji (withdrawal effects). Wataacha kutumia heroini, na kupata matibabu haya badala ya heroini. Hii inamaanisha hawatapatamadhara ya uondoaji (withdrawal effects), na kwa sababu hawajidungi wanajipunguzia hatari ya kupata UKIMWI au Homa ya Ini (hepatitis). Kwa mwisho wa mwaka wa 2015, watu wanaojidunga heroini chini ya 1% walikuwa wamepata huduma hizi. Utafiti huu una lengo la kuamua kiwango cha matumizi, na mambo yanayoathiri matumizi ya tiba mbadala afyuni (medical assisted Therapy).

Madhumuni ya Utafiti: Ninafanya utafiti huu kwa watu wanaojidunga heroini Mathare, Kaunti la Nairobi. Utafiti huu una lengo la kuamua kiwango na mambo yanayohusiana na matumizi ya tiba mbadala ya afyuni (medical assisted Therapy). Utafiti huu utapeana mawaidha ya kuweka mikakati ya kupeana huduma hizi. Kushiriki kwako katika utafiti huu utasaidia madaktari wako kutoa huduma bora kwako na pia kuanzisha sera ambazo zitasaidia kutunza watu wengine wanaojidunga heroini.

Faida za Utafiti: Hakuna faida kwa mtu binafsi, hata hivyo, utapata fursa ya kuuliza na kujibiwa maswali kuhusu tiba mbadala ya afyuni (medical assisted Therapy). Aidha, takwimu zitakazokusanywa zitasaidia madaktari kuweka mikakati ya kukomeza madhara ya kutozingatia matibabu.

Madhara: Hakuna hatari inayojulikana wewe kushiriki katika utafiti huu. Kutoshiriki katika utafiti huu hakutaathiri huduma unazopokea katika kliniki hii.

Hiari ya kushiriki: Kushiriki kwa utafiti huu itakuwa ni kwa hiari yako. Hakutakuwa na zawadi au fedha kwa ajili ya kushiriki na kila mtu yuko huru kushiriki au kuondoka kutoka kwa utafiti huu wakati wowote.

Utaratibu: Utafiti utafanyika kwa kutumia dodoso (questionnaire) na mahojiano kwa watu walio na ujuzi

Siri ya Utafiti: Taarifa zote kuuhusu zitawekwa siri na watafiti. Majina yako hayatatumika wakati wa utafiti, badala yake dodoso (questionnaire) zitakuwa na nambari. Watafiti na wasaidizi ndio tu watakuwa na idhini ya kufikia takwimu hizi.

Matatizo au maswali: Iwapo utakuwa na maswali yoyote kuhusu utafiti au matumizi ya matokeo unaweza kuwasiliana na mpelelezi mkuu, George Wambugu nambari 0726137547.

Kama una maswali yoyote juu ya haki zako kama mshiriki katika utafiti huu, unaweza kuwasiliana na Hospitali kuu ya Kenyatta na Kamati ya utafiti (KNH-ESRC) kwa kutukia barua pepe uonknh_erc@uonbi.ac.ke ama kwa kupiga simu (254-020) 2726300

Idhini ya Muhojiwa

Mimi.....nimekubali kwa hiari yangu kushiriki katika utafiti huu. Nimeelezewa na nimeelewa kuhusu utafiti huu, maswali yangu yamejibiwa na nikiwa na maswali ninaweza kupiga simu kwa George Wambugu nikitumia nambari 0726137547.

Nimeelewa ya kwamba kushiriki au kutoshiriki kwangu hakutaathiri kwa njia yoyote matibabu yangu katika Kliniki ya Tiba mbadala ya afyuni. Nimepewa uhakika kwamba kushiriki katika huu utafiti hakuna athari kwa afya yangu au huduma ninayopokea katika Kliniki ya Tiba mbadala ya afyuni Kaunti la Nairobi

Sahihi.....Tarehe.....

Mimi nathibitisha kwamba nimeelezea kikamilifu utafiti huu na yaliyomo katika fomu hii ya idhini. Nathibitisha kuwa sijashurutisha ama kupeana manufaa yoyote, fedha ama vinginevyo ndio muhojiwa ashiriki kwa huu utafiti.

Mtafiti.....sahihi.....Tarehe.....
.....