

**BIOPSYCHOSOCIAL DETERMINANTS OF RELAPSE AMONG  
PATIENTS DIAGNOSED WITH SUBSTANCE RELATED DISORDERS  
AT MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL,  
KENYA**

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## DECLARATION

I Paul Mutua Mwove declare that this thesis is my original work and has not been presented in any other university or institution for award of credit.

Signature ..... Date.....

## CERTIFICATE OF APPROVAL

This research proposal has been submitted for examination with our approval as the university supervisors

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## **DEDICATION**

I wish to dedicate this thesis to my darling wife Sabina Mutua and my children Judith Mumbua Mutua and Juliet Nduku Mutua for their support, patience and encouragement when compiling this work.

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## **ABBREVIATIONS AND ACRONYMS**

<b>APA</b>	American Psychiatric Association
<b>CI</b>	Confidence Interval
<b>CIDI</b>	Composite International Diagnostic Interview
<b>CBT</b>	Cognitive Behavioral Therapy
<b>DSM-IV</b>	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition
<b>DSM-5</b>	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
<b>ICD-10</b>	International Classification of Diseases, 10th revision
<b>MNTRH</b>	Mathari National Teaching and Referral Hospital
<b>NIDA</b>	National Institute of Drug Abuse
<b>NRB</b>	National Research Bureau
<b>OR</b>	Odds Ratio
<b>OPD</b>	Outpatient Department
<b>RP</b>	Relapse Prevention
<b>RR</b>	Risk Ratio
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>UNODC</b>	United Nations Organization on Drug Control

## OPERATIONAL DEFINITION OF TERMS

**Biological** this refers to respondents' characteristics that relate to age sex and personality

**Dependency** refusal to exercise initiative and relying on habit forming substances like bhang, alcohol, cocaine , heroin amongst other drugs to perform daily activities of living

**Determinants** these are elements that affects the direction to which substance abuse relapse take.

**Psychological** this refers to factors that relate to, mental activities that affect drug abuse

**Prevalence** the state of being prevalent

**Social** refers to those characteristic that are related on how one relates to self, peers and friends in the society

**Support** to offer any assistance provided to patients suffering from relapse in substance abuse it can be financial or in any other form.

**Relapse** refers to going back to or setback in a person's attempt to stop using drugs of abuse which can be deliberate or due to the circumstances the patient is in.

**Substances** refer to illegal drugs that are frequently abused and includes like bhang, alcohol, cocaine, heroin amongst other drugs

**Substance abuse** improper use of illegal drugs like bhang, alcohol, cocaine, heroin amongst other drugs

## ABSTRACT

Studies show that relapse or uncontrolled return to drugs among patients diagnosed with substance related disorders following competent treatment has been on the rise. This has remained a major challenge to substance abusers and their counselors. The objective of this research aimed at identifying the social, psychological and biological determinants that promote and, or prevent relapse among substance abuse patients at Mathari National Teaching and Referral Hospital, Kenya. This study is a descriptive cross-sectional study design targeting care givers or guardians of patients seeking both outpatient and inpatients services for relapse due to substance abuse at Mathari Referral and National Hospital. Quantitative research approach was used to identify the causes of relapse among patients diagnosed with substance related disorders. In order to minimize bias during selection of respondents, multistage sampling was adopted. Pre-testing of the study tools was done in the Outpatient department, MNTRH. The responses were coded for analysis and put on an excel sheet. Data collected was then analyzed by statistical software (SPSS version 25). Both regression and chi-square were used to show association and comparisons between the variables respectively. Descriptive statistics were presented by use of the mean, percentages and standard deviation. Chi-square was used determine statistical significance of the differences in proportions and logistic regression used to identify the association between the variables. The findings showed that, majority, 72.6 % (n=82) of the patients on substance abuse were between age 20 and 39 years with most 69.9% (n=79) of them from Nairobi county. Determinants of relapse among substance abuse patients were: the accessibility of specific drug(s) of addiction that patient was taking ( $p < 0.011$ ), Age of the patient in years ( $p < 0.003$ ), frequent conflicts within the family ( $p < 0.014$ ), and having financial or unemployment problems ( $p < 0.010$ ). All these could predict the likelihood of relapse among patients at the Mathari National Referral Hospital. Study concluded that Biological factors have a major role in determining relapse among patients with relapse in substance abuse in MNTRH compared to social and psychological factors. There is need for reduced access to drugs of addiction by instituting and implementing appropriate legislation by both National and County governments in Kenya. All leaders should come together to address the rising unemployment problem among the youth.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background

The chapter introduces the background of the study and highlights the trends in relapse to drug abuse situation globally and in Kenya. The statement of the problem is highlighted and presented with increased prevalence of relapse of patients treated for substance abuse in MNTRH. The chapter therefore sets out the research question and the objectives of this study, which in turn will guide my research.

Substance use causes psychological, health and behavioral problems (Shonkoff & Garner, 2012 and Shonkoff, Boyce, & McEwen, 2009). Drug abuse leads to a maladaptive behavior that manifests with repeated drug use, dependence and tolerance. This leads to poor health of the patient and it increases the risk of non communicable diseases. Relapse to substance use after treatment is a global problem that is also prevalent among U.S. adults with a prevalence rate of between 7 to 20 percent (Substance Abuse and Mental Health Services Administration, 2011).

Over 22 million people Globally in 2013 needed treatment for substance abuse and alcoholism use but only 4.1 million received treatment according to (SAMHSA, C. for B. H. S. and Q. (2015) about 34% of these patients were emerging adults who are between ages 18-29 (SAMHSA et al. 2015). This age group has the highest rates of drug and alcohol in comparison to older adults and adolescents.

In Kenya there has been an increase in cases of alcohol and substance abuse with serious negative consequences (NACADA, 2013). World Health Organizations global status report on drugs and health states that, hazardous use of drugs and alcohol is a major contributor to death,

disease, and injury (WHO, 2014). The report further notes that use of alcohol alone contributes to three million deaths each year globally as a result of complications such as liver cirrhosis, cancers and injuries to self and others occasioned by drunk driving and violence (WHO, 2014).

The WHO report further notes that, treatment and rehabilitation of patients addicted to substances is expensive and non-conclusive due to frequent relapses. A survey carried out by (NACADA 2009) on alcohol use and substance abuse showed that there was a rising demand for treatment and rehabilitation services in the country. Despite this advancement in rehabilitation centers, the numbers of relapse cases were also on the rise by about 60%. Studies by (Chen et al. 2011) attributed the high relapse rate to the fact that drug and substance abuse is a mental disorder. This explains why it often leads to addiction and dependence.

A study by (Polich, Armor & Braiker, 2011) showed that a higher percentage of patients are more likely to relapse within the first year after being treated for substance abuse and this places relapse as a key challenge in treatment of substance related disorders. This issue has left many scholars wondering why the increased number of relapses among these patients within a short duration after complete treatment.

Biopsychosocial model of health explains that, genetic makeup (biology), mental health and personality (psychology) and sociocultural environment (social world) interact to contribute to their experience of health or illness. The approach considers biological, social and psychological factors and their interaction in understanding health, illness and health care delivery. None of the factors is enough to create health or cause illness by themselves (Cohen, 2010).



This study therefore aims at finding out the Biopsychosocial factors that determine recurrence in drug and substance use among patients who are diagnosed and treated for substance related disorders at Mathari National and referral Hospital, Kenya.

## 1.2. Problem Statement

In 2016 more than three million people died as a result of harmful effects of drugs and other substances commonly abused (WHO, 2018). These effects, key among them include physical aggression leading to fights, physical injuries as a result of accidents and fights, and mental health complications and diseases like cancer and stroke. Relapse is dangerous to patients' recovery and survival as it exposes the clients to the same harmful effects of drugs and substances they had temporarily overcome earlier.

**Table 1.1: Prevalence of substance abuse cases at MNTRH**

MONTH	2017		2018	
	Patients admitted with substance related disorders	Patients readmitted following relapse	Patients admitted with substance related disorders	Patients readmitted following relapse
JANUARY	20	6	16	14
FEBRUARY	18	8	23	13
MARCH	16	9	14	11
APRIL	14	10	13	10
MAY	16	9	19	15
JUNE	25	10	17	11
JULY	10	11	16	12
AUGUST	14	11	26	14
SEPTEMBER	21	13	19	12
OCTOBER	18	10	13	10
NOVEMBER	11	14	15	10
DECEMBER	15	14		
	<b>198</b>	<b>125</b>	<b>191</b>	<b>132</b>
		<b>63.1%</b>		<b>69.1%</b>

**Source:** - Health records and information technology department, Mathare National Referral and Teaching Hospital (Date-7<sup>th</sup> December 2018).

Data obtained from the records department at Mathare National Referral and Teaching Hospital (MNTRH) shows that there were more clients who had relapses from substance abuse in the years 2018 compared to those who had the same in 2017 (69% vs. 63%) among patients who are admitted, treated and discharged from the hospital as shown on table 1 above.

This data reveals that there is a persistent increase in the number of relapses that if not checked could even worsen. The study aims at finding out the reasons that contribute to the relapses among these patients who are diagnosed with drug abuse at MNTRH almost immediately after comprehensive treatment. The main aim of reducing the relapses remains the focus in reducing the burden of managing this disorder on the economy and on the health system.

### **1.3 Research Questions**

1. What are the biological determinants contributing to relapse among persons diagnosed with substance related disorders in MNTRH?
2. What are the social determinants contributing to relapse among persons diagnosed with substance related disorders in MNTRH?
3. What are the psychological determinants contributing to relapse among persons diagnosed with substance related disorders in MNTRH?

### **1.4 Objectives**

#### **1.4.1 Broad Objective**

To assess the biosychosocial determinants of relapse among patients diagnosed with substance related disorders at Mathare Teaching, National and Referral Hospital, Nairobi.

### **1.4.2. Specific objectives**

1. To identify biological determinants of relapse in patients suffering from substance related disorders in MNTRH.
2. To explore social determinants of relapse in persons suffering from substance related disorders in MNTRH.
3. To find out the psychological determinants of relapse on patients diagnosed with substance related disorders in MNTRH.

### **1.5 Justification of the Study**

The outcome of substance abuse, including alcohol is an increase in aggressive behaviour, physical and psychiatric illness, injuries, un-safe sex and cognitive impairment and deaths. These effects have an economic effect to the caregivers of these patients. There is limited data on the causes / predisposing factors to these relapses among substance abuse clients admitted and treated in Mathari National and Referral Hospital, thus prompting the need for this study. Drug and substance abuse leads to addiction among other social and health consequences.

### **1.6 Significance of Study**

This study was aimed at generating information was essential in reducing the number of relapse among patients suffering from substance abuse. It also formed a foundation for implementing strategies that were to help in guaranteeing a successful recovery from addiction. This ultimately improved the standards of living and enjoyment of life of these patients. Results from this investigation are also to add to the research evidence available on the determinants of relapse among these patients.

## **1.7 Summary of chapter one**

The chapter has introduced the background of relapse in substance abuse, and described the problem statement, justification and significance of this study. Literature review, which will be guided by the study objectives, will next be presented.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter provides an overview of relevant literature that is related to this study. The existing literature aided in identifying the current research evidence on the subject and what other people have done that is essential in addressing the research questions. The review was carried out as per the objectives of this study. Studies around the world (Polich et al. 2011) have shown that there is a possibility that between 60 to 90 percent of alcohol abusers relapse before a period of 4-years elapse after treatment. Previous Studies have shown that most relapses occur from the third month to twelve months post treatment making it increasingly difficult to assist these individuals in maintaining significant rehabilitation from substance abuse irrespective of the care they have been. (Jeewa 2008, Kaiser 2012). Most youths begin taking drugs when they are between ages 18 and 30 years. This is the most vulnerable age group which needs family and community support to prevent them from peer influence (Jeewa et al. 2008).

### **2.1 Biological Determinants to relapse in substance abuse**

#### **2.1.1 Age**

A study by Derek et al. (2004) in South Africa on alcohol relapse and age carried out in five year period, older adults were shown to be less likely to relapse following addiction treatment compared with middle and young adults. Carson et al. (2016). In a study done in Canada found that, older patients have a lower relapse rate as compared to young patients. The study associated the difference as due to other age related factors which impact positively on abstinence post treatment such as higher self- efficacy, greater motivation and social networks among adults.

### **2.1.2 Sex**

Sex differences affect relapse to drugs differently for both men and women (Perry et al. 2016). The researchers explained this to be due to addiction-like behaviors for both men and women which is also affected differently. Environment affects the brain differently for both males and females, and this leads to differences in vulnerability to relapse and addiction in male species as compared to the female species (Becker et al. 2016). During attempt to stop drug use, women experience greater difficulties as compared to men (Becker et al. 2016). Females verbalize greater anxiety and mood changes compared to male counterparts (Curtin 2009). However, other studies found that males suffer more complications such as withdrawal symptoms when stopping alcohol consumption than women. (Devaut et al, 2013). In another study, it was found that social support is a major factor influencing relapse to drugs in males and females. The researchers found that men are more supported from home and in their working environment. Women on the other hand tend to be cut off and secluded from the community and their partners tend to be unfriendly (Campbell and Ettore, 2011).

### **2.1.3 Occupation/Profession**

In a study done in USA to find out if medical care professionals using major opioids such as Fentanyl, Morphine, Meperidine had higher risk of relapse, it was found that anesthesiologists represented a higher proportion of medical health care workers in drug rehabilitation programs than predicted from their relative numbers (Nayak et al. 2010). The rates of relapse were also high, and this was associated perhaps by easy accessibility of drugs which may be due to nature of their duty which makes it easy to access highly addictive opioids drugs. Study established that

anesthesiologists had three times the risk of relapse and death from substance use disorders than other medical workers (Alexander et al. 2011).

#### **2.1.4 Level of education**

An association exists between relapse and low academic achievement. In a study done in Miami USA, the lowest academic performers were found to have the highest relapse rates. The study concluded that relapse was highest among addicts who have less education and who report lower academic grades (Blum K, et al 2014). In another study done in India, level of education was found to be a key predictor of drug relapse (Sharma K & Suneet, 2012)

#### **2.1.5 Genetics**

According to studies, Young people who suffer from some personality characteristics like impulsivity, psychopaths, attention deficit hyperactivity disorder as well as conduct disorders are more likely to develop substance abuse and other related disorders (Kilgus et al. 2011). The same study found that people who have the above disorders and are addicted to substances are more vulnerable to relapse than other general population.

Nayak P, et al. (2012) showed that people predisposed to low self-esteem; passivity and lack of assertiveness are at higher risk of relapse to drugs and alcohol after undergoing a period of treatment. The National Suicide Research Foundation in a study done in 2012 showed that vulnerability to relapse is associated with personality characteristics that are associated with substance abuse, and these include people with poor interpersonal relationships, poor decision making skills., low self- esteem and un-assertiveness.

Individuals with low Self-esteem have been associated with substance abuse as a counter measure mechanism on their personality. These individuals were observed to have increased relapse rate on substance abuse among them (Sussman, 2014).

### **2.1.6 Comorbid Illness**

In a research on prevention of substance abuse among clients with mental illnesses, it was found that patients who have both a co-occurring substance abuse problem with mental illnesses are highly prone to relapse, even after they have attained full remission. The study further found that there were high chances of relapse in substance abuse when one had other mental illnesses like schizophrenia, mania, anxiety disorders, mood disorders and personality disorders (Robert, 2012)

### **2.1.7 Marital Status**

Marital status and addiction relapse bear a sufficient relationship. The highest frequency of addiction relapse is observed in single persons, people who have lost spouse through death and those who are divorced (Farkhondeh et al. 2015). Marriage acted as a form of protective factor against relapse for those who are undergoing treatment against drug abuse. The study noted that being married is related to stable or improved outcomes after treatment and the support offered a significant cushion to drug relapse (Moos et al 2011).

## **2.2 Social Determinants to relapse in substance abuse**

### **2.2.1 Peer pressure**

Peer influence is a significant factor which can determine if an individual, family, community or a society is more likely to lead to involvement in activities that can make them take drugs or relapse to substance abuse. On the other hand there are protective factors that can prevent these



outcomes (Naidoo, 2011). The National Drug Agency in a study done in Malaysia between 2010 and 2011, involving 27000 drug addicts found that 75% of the addicts became hooked to drugs after having been introduced to the substances by friends. The study noted that, peer pressure can be a reality for an individual at any age and that what people believe their peers want them to do is often what they actually do. Study found that peer pressure is a key determinant of drug relapse in people undergoing treatment for drug abuse in Malaysia. (Ibrahim, Fauziah & Naresh, Kumar. 2009).

### **2.2.2 Easy accessibility of drugs**

In a society where there is easy access to drugs, there are higher chances that cases of relapse can be high. The situation can be worsened by high unemployment, social disorganization and deprivation (Kemp K, Savitz, and Zanis 2004). Poverty, unemployment and community adversity have been major contributing factors to relapse in substance misuse (Swanepoel I. Stephen G, and Gretel C, 2016). Availability and easy accessibility of cheap drugs such as alcohol can lead to binge drinking leading to relapse. This led to setting up of laws on minimum age of 18 years to alcohol use in many countries but this could not help those patients who had been on rehabilitation for substance abuse (Radnedge, 2013).

### **2.2.3 Family Relationships that affect substance abuse**

Family support is very essential in the wellbeing of its members. For a healthy family, the following six practice principles were identified by Family Support Agency in a study in 2013 as key. These include equal participation by all members in household and community activities, need to ensuring equality at all levels, and raising awareness in case of any incidence and early intervention are some of the ways that can help in reducing conflicts in the family. Family

strengths and cohesion are important and need to be utilized well to prevent relapse (Annis H, Davis C et al 2013). Another study found that men who remained drug free after completing addiction treatment maintained a health and positive relationship with their spouses and families, whereas those who often relapsed maintained an unhealthy relationship with their families. When patients are rejected or isolated by the family, they become vulnerable and may join bad companies that may lure them back to drugs. The study further identified peer pressure coming from friends and family as key players impacting the life of a person who had been diagnosed with substance abuse. A strong social support leads to behavior modifications and treatment retention and better outcomes. Lack of this support can lead to a tendency to develop addiction to these drugs. (Ibrahim M, Kumar L, 2009).

#### **2.2.4 Socioeconomic factors that affect relapse in substance abuse**

Patients can opt to relapse due to favorable conditions and life supporting facilities that are available at the hospital or at the rehabilitation centre as compared to the situation at their homes. The study explains this to be due to lack of support from friends, relatives and due to stressful nature of their jobs (Naidoo, 2009).

#### **2.2.5 Patients Residence or Environment**

Studies on relapse prevention have found that being together with people who abuse drugs and being in the environment where drugs are being consumed can make patients to relapse after treatment. It was noted for example, maintaining close relationship with old friends and frequenting same socialization venues where one used to spend time like favorite clubs can influence a person to start drinking again. The study recommends that it's better to avoid these temptations especially in early phases of recovery (Mikkonen Juha, Raphael Denis 2010).

Another research found that during recovery from addiction, a reminder such as visual images of addiction behavior on television can lead to relapse. Study notes that, although it was difficult to stay away completely from any trigger like a reminders, they needed to come up with ways of coping with those urges positively in order reduce the chances of relapse ever happening (Heather, 2010).

### **2.2.6 Patients' Lifestyle**

Research has described good and balanced nutrition, adequate sleep, reduced stress and fun to be key components of a health and balanced lifestyle. The study noted that a healthy lifestyle helps to reduce incidences of drug relapse in people who have completed or are being treated for drug abuse (Martin, 2012). Similarly, another study found that a stable residence, being employed, education or training, and making improvement in interpersonal relationships are key to reducing incidences of drug relapses. (Glyn D, Sarah W, 2015). In another study, great emphasize is placed more on finding a job, having a home in a safe environment, and having supportive friends as key to relapse prevention (Marlatt W, Bowen S. et al 2010).

## **2.4 Psychological Factors that affect relapse in substance abuse this is incomplete**

### **2.4.1 Stress**

In a study of untreated heavy drinkers in Britain and their readiness to change, the investigators found that, stress is among the leading causes of relapse among drug addicts. They noted that though all forms of stress can't be avoided, setting priority changes in lifestyle and relationships helps a recovering patient to avoid incidences that spark tension and other negative emotions associated with relapse (Hames 2013).

#### **2.4.2 Personality characteristics**

Studies indicate that there is a relationship between personality disorders and drug relapse. (Costa T, Lockenhoff T, 2010) found people with low conscientiousness and high neurotic personality type disorder are vulnerable to Marijuana, Tobacco, Heroin and Cocaine relapse

#### **2.4.3 Emotional factors**

Research shows that, emotional devastation of drug addiction is experienced by the addicts themselves, spouses, children and close friends and the emotional reactions range from pain, stress, discouragement, shame and self-guilty (Scott Hemphill, Sampat, Bhaven N. 2011). Another study found out that emotional injuries may lead people to take drugs and other substances as well as lead to increased incidences of relapse to those already recovering from addiction (Koob G, Schulkin 2018). The same study found that emotional pain arise out of a desire to escape and forget and numb the pain and may drive people undergoing addiction treatment to relapse.

#### **2.4.4 Coping mechanisms**

A study by Breese G and Dayas et al (2005) at an alcoholic rehabilitation center in South Africa associated relapse to be as a result of a choice the addict makes between continuing with follow-up care after treatment. Some patients were found not to apply the life skills that could have enabled them develop effective coping mechanisms when faced with challenges. The findings further show that some patients even fail to attend to support groups and aftercare programs. The study further identifies some high exposures and danger situations that can be outside the control of the individual and are capable of contributing to relapse. These include interpersonal conflicts and fights, strong differences in opinions, peer pressure, poor relationships and

disagreements.. These high-risk situations pose a general threat to the client's sense of self-control and increase their return to substance use (Kistensamy H, et al, 2009). Research identifies acute or chronic Stress at work or at personal lives or due to lifestyle choices as a trigger for relapse after one had almost recovered (Walter et al., 2010). The study identifies key predictors of relapse as social factors that are related to the individual daily activities.

## **2.5 Applied Theory: Adaptation Model**

The theory applied to facilitate the study is Adaptation Model by sister calister Roy. In this model, the patient also referred to as person is viewed as an adaptive system interacting with both internal and external environment. The patients (person) main function is to maintain integrity in the face of these environmental stimuli. Integrity is “the level of wholeness achieved by adapting to changes in needs” (Roy & Andrews, 1999).

The nurse's duty in the Roy adaptation Model is to manipulate and create the impetus or encouragement so that the patient's response to his or her environment can be enhanced. The three stimuli in the case of the conceptual model (figure 1) are the biological determinants of relapse, psychological and social determinants. The Nurse manipulates the three independent variables hence enhancing patient's response leading to positive adaptation/outcome. Example, in the case of psychological determinants of relapse in persons suffering and being treated for drugs and substances , the nurse interacts with the patient by supporting and working together to improve the patient's stress coping mechanisms leading to positive adaptation (positive ways of coping with stress). Due to improved coping/adaptation, the patient avoids taking drugs as a method of coping with stress hence avoiding relapse.

Adaptation model was applied in the study by enhanced psycho-education and counseling. Patient can recognize threats which may enhance relapse, for example the biological determinants likely to lead to relapse are factors like age, genetic factors, some occupations and presence of comorbid illnesses existing together with drug abuse disorder. Knowledge leads to enhanced awareness and self-understanding which may lead to behavior change in order to avoid relapse, for example patient may avoid working in a bar and find an alternative occupation and in other cases a patient with comorbid illness like schizophrenia may enhance his drug compliance in order to avoid relapse.

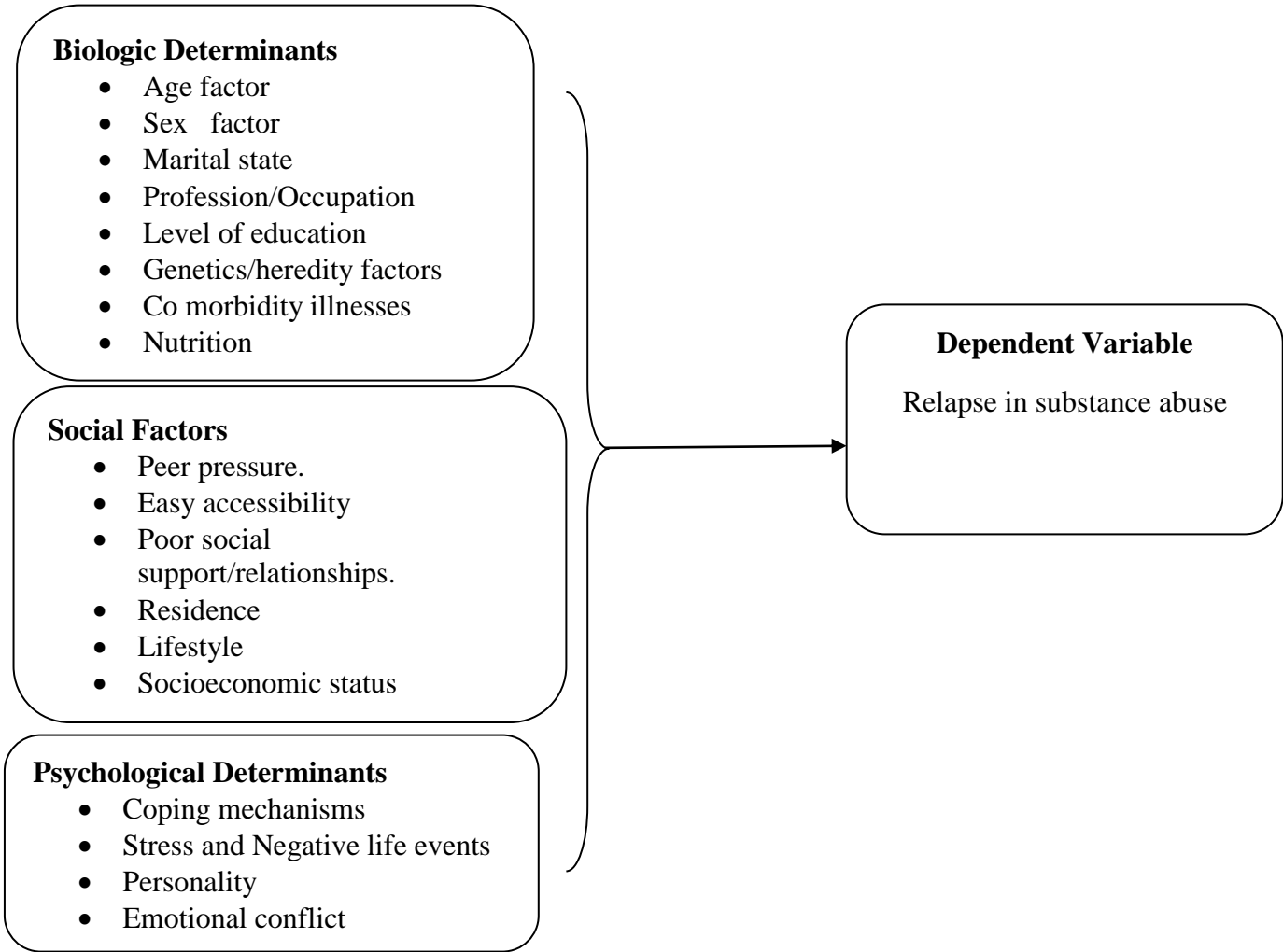
Among the social determinants responsible for relapse are peer pressure, availability and easy accessibility of drugs, the environment one resides among others. The patient needs this information in order to make an informed choice which in turn leads to reduced relapses. Nurse needs to give counseling on decision making, goal setting and how to avoid negative peer pressure. Cognitive behavior therapy and behavior modification helps patient to avoid relapse in future, for example a patient may change his friends (peers) who encourage him to take drugs.

The patient needs knowledge given through psycho education on psychological determinants of relapse. The patients coping mechanisms, his reaction to stress and level of emotional control and impulsivity are some of the factors which leads to relapse. Through cognitive behavior therapy and behavior modification, patient can be counseled on positive ways of coping with stress and need to maintain good relationship with family and friends. This can help patients to avoid drinking when under stress, hence avoiding relapse.

**2.6 Conceptual Framework**

The model (figure 2.1) reflects outcome of the three variables which are: biological determinants, psychological and social determinants. The study is about the bio psychosocial determinants of relapse in persons who are sick and being treated for drug and substance related disorders at Mathari Hospital. The conceptual model shows how the three independent variables interact to cause relapse, which is the dependent variable. The outcome of relapse was the number of patients taken to Hospital or rehabilitation facility for treatment. See figure 2.1 below.

**Independent Variables**



**Figure 2.1: Conceptual Framework**

## **2.7 Summary of the Review**

The review has shown that indeed relapse in substance abuse is a global phenomenon. Different studies have shown that the rate of relapse vary and cannot be explained clearly why different patients have more or less relapses compared to other patients. Therefore this study seeks to fill this gap among others that include other biopsychosocial determinants of relapse. It also sought to explain if there were variations in the relapse rate across different drugs and substances abused by people addicted to drugs and substances that are diagnosed and treated at the Mathari Hospital.



## **CHAPTER THREE: MATERIALS AND METHODS**

### **3.1 Introduction**

This chapter covers the study design and methods that was used in this study. They included population, study area, eligibility criteria, data collection, sampling, data analysis and data collection tools.

### **3.2 Design of the Study.**

A descriptive cross-sectional research design was adopted. This design involved collection of information without changing their contextual environment. Cross-sectional descriptive survey design assists in enquiries to show effects, similarities and associations of the different variables. Mugenda and Mugenda (2003), explains that cross-sectional descriptive studies are important in evaluating relationships between variable without any interference or manipulation.

### **3.3 Area of Study.**

The research was done in Mathari Teaching and Referral Hospital. The hospital is located along the Thika road ,about two kilometers from the central business district of Kenyan city of Nairobi The bed capacity of the hospital is about 700 but currently admits over 1000 patients, making it the biggest psychiatric Hospital in Kenya in terms of patient population (of which a third are reserved for females). It is located near the Mathare slums of Nairobi County. It is Kenya's main psychiatric teaching and referral hospital handling all cases of mental illnesses both outpatient and inpatient care. Severe psychiatric disorders are also managed in this facility. MNTRH offers treatment and rehabilitation services to patients suffering from drugs and substance related disorders. It has a drug rehabilitation ward with a bed capacity of 48 which

caters for both male and female patients, and an outpatient clinic specializing in counseling and rehabilitation of patients diagnosed with drugs and substance related disorders. The methadone clinic, which operates daily on outpatient basis, specializes entirely on heroin addiction cases.

Mathari Hospital has two sections of which one section admits civil patients and while the other section admits patients under legal custody. The civil section consists of male and females sides. Male side has following wards: 5Male, 6Male, 8Male, 9Male, Rehabilitation ward and Amenity wards. Female side on the other hand consists of wards: 2Female, 5Female and 6Female. The three clinics run by the Hospital include: The psychiatric outpatient clinic, which attends to patients on follow-up following discharge from wards and those who come for treatment on a daily basis either as self-referrals or referred from other institutions. The clinic for substance abuse attends to patients being followed up for drug related disorders, while the methadone clinic specializes on heroin addiction only. Mathari National Hospital was chosen for this study because of its status as a referral hospital for psychiatric and mental Health patients, it is also a national teaching hospital and an institution of higher learning and it is a clinical and practice center for Doctors, Nurses and other mental health professionals.

Based on these factors, it was expected that, the hospital can offer a high quality of both inpatient and outpatient care, which can stimulate the student to emulate the same practice during their clinical experience.

### 3.3 Study Population

The study participants were guardians of patients being treated with substance related disorders and, who have suffered a relapse in Mathari Teaching and Referral Hospital both as inpatients or outpatients. The care givers were drawn from civil sides of the Hospital and the outpatient clinics. Forensic side of the Hospital was omitted because of Ethical/ legal considerations and absence of care givers. The population of this study consisted of 160 care givers who were drawn from different wards and clinics in the Hospital.

From male side, ward 8Male and the rehabilitation wards were selected. Ward 8Male is selected because of its large size and high patient population while rehabilitation ward is selected because the ward admits only drug related cases. In the female side, ward 5female is selected also due to its large size and high patient population. Two clinics were selected; the methadone clinic and the clinic for substance abuse treatment (CSAT).

### 3.4 Sample size Determination

Sample size was determined using Fisher *et, al.* method found in Mugenda and Mugenda (2004). Substance use has a prevalence rate among psychiatric patients of 8.8% according to WHO 2004 and cited by Ndetei (2008). It was calculated as shown below:

$$n = n = \frac{Z^2 pq}{d^2}$$

Where:

n = the required sample size (where population is greater than 10,000).

Z = standard normal deviation at the required confidence level (z- score of 1.96).

p = since the prevalence of relapse in substance use disorder in clients affected by mental illness at the hospital is not known, we used 50% (0.5)

q= was 0.5 (1-0.5)

d = margin of error of 5%

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2}$$

$$= \frac{3.8416 \times 0.5 \times 0.5}{0.0025}$$

$$= \frac{0.9604}{0.0025}$$

**= 384 Respondents**

Since the number of patients diagnosed with substance abuse disorder are less ten thousands (10,000). Yamane formula (1967) was used in sample adjustment.

$$nf = \frac{n}{1 + \frac{n}{N}}$$

In this case:

nf = the desired sample size for population <10,000

n= required sample size when population is greater than 10,000

N= estimate of study population i.e. patients with relapse in substance abuse disorder that are estimated to have caregiver at time of collecting data (estimated at 160).

$$Nf = N / (1 + N/n)$$

$$= \frac{384}{1 + 384/160}$$

$$N_f = N / (1 + N/n)$$

$$= \frac{384}{1 + 384/160}$$

**= 113 caregivers of patients with relapse**

Additional 10% of 113, which is 124.3 rounding up to 124 caregivers of patients with substance abuse disorder were added to cater for any losses or attrition. This is in line with Burns and Grove (2011) who says that, the acceptance rate of 90% ensures the sample represents the study population. Therefore a sum total of one hundred and twenty four (124) questionnaires were administered to the study subjects.

### **3.5.1 Inclusion Criteria**

Primary care givers of patients who must have been treated in MNTRH, either as an outpatient or inpatient after having been treated for relapse of substance related disorder. They must be willing to consent voluntarily to participate.

### **3.5.2 Exclusion Criteria**

Caregivers not willing were excluded from this study. Caregivers who were not available during data collection period were excluded.

## **3.6 Study variables.**

### **3.6.1 Independent variables**

These included biological, psychological and sociological determinants that are going to be addressed by the questionnaire. Biological determinants included age factor, sex of the patient, marriage status, Occupation, education level, genetics/heredity, and co morbidity illnesses among

others. Psychological determinants included coping mechanisms, stress, negative life events, interpersonal conflicts, personality and emotional control among others. Social determinants were explored by including in the questionnaire issues like Peer pressure, Affordable and easy availability of abused drugs, Residence, Lifestyle, and Socioeconomic factors among others.

### **3.6.2 Dependent Variables**

The dependent variable in the study is relapse or re-emerging of the of the substance related habits like drinking alcohol or smoking marijuana.

### **3.7 Sampling Procedure**

Multistage sampling method was used to select all the eligible respondents who meet the inclusion criteria. Both probability and non-probability methods used. Purposive method of sampling was used to select the departments where patients with relapse are attended to. This included both the inpatient and the outpatient departments as shown on table 3.1. Purposive sampling method was chosen because it allows the researcher to concentrate in areas that are likely to provide more information for the study. Forensic side of the hospital was avoided because patients normally are alone without caregivers who could have been interviewed. From table 3.1, the wards represented the strata. The proportions of expected respondents were calculated from each stratum according to the prevalence of relapse in substance abuse in those departments or wards. To get the proportion of samples from each stratum, the following formula was used.

$$\frac{n}{160} \times 113$$

Where, **n** is the average number of patients with relapse

160 is the number of patients with relapse at the study area, 113 is the desired sample size

**Table 3.1: Sample proportions.**

DEPARTMENTS	AVERAGE NO. OF PATIENTS IN THE WARD	PATIENTS WITH DRUG RELATED DISORDERS	PATIENTS WHO HAVE HAD RELAPSE (n)	TOTAL
<b>INPATIENT</b>				
8 Male	80	16	15	$\frac{15 \times 113}{160} = 11$
Drug Rehab Ward	48	48	42	$\frac{42 \times 113}{160} = 30$
5 Female	60	14	8	$\frac{8 \times 113}{160} = 6$
<b>OUTPATIENT</b>				
Psychiatric outpatient clinic (General OPD),	200	80	35	$\frac{35 \times 113}{160} = 25$
MAT Clinic (Methadone Assisted therapy),	200	200	60	$\frac{60 \times 113}{160} = 43$
<b>TOTAL</b>		<b>368</b>	<b>160</b>	<b>115</b>

Data was collected in all the wards above until the required sample is attained.

**Source of information:** Record department, MNTRH and physically verified by counting from admission book of each ward or Department.

**Date:** - 30<sup>th</sup> Jan, 2019.

Now that the proportion of the respondents from each ward/ department is known, Simple random sampling method was used in recruiting **124 respondents**. This method entailed using small folded pieces of papers with 124 written Y while the rest 160 written N. They were mixed evenly and those respondents who met the eligibility criteria had picked a Y were allowed to participate in this study. Those who picked a paper written “N” were excluded from this study. This method of sampling reduced biasness and provided equal opportunities to all, the study subjects.

### **3.8 Data collection and Management**

#### **3.8.1 Study instruments**

Questionnaires were used in collecting data. These questionnaires were detailed to capture all necessary information required to answer the research questions. Pre-coding of the questionnaire was carried out in line with the study objectives.

#### **3.10 Data collection, cleaning and entry**

#### **3.8.2 Training of research assistants**

Interviews were carried out in selection of 3 research assistants who earlier had been trained on data collection. The research assistants were local universities students who were conversant with the area of study. These research assistants were able to understand the study methodology so as to collect the right data. The training took one day. They were trained on how to administer the questionnaire, purpose of the study, method to use and procedure was explained in details and the trainers went through the questionnaire several times with the assistants.



### **3.9 Validity and Authenticity of the Study Instruments**

#### **3.9.1 Pre-testing of the study instrument**

Pretesting of the research tools was carried out to ensure that they were valid and reliable. Twenty three questionnaires (10% of the total number of questionnaires) were pre-tested at Outpatient Department, MNTRH. Pre-test was to ensure reliability and validity of the study tools. It also helped in adjusting the questions to ensure that they were clear and objective. During pre-test, a questionnaire was used to interview the care givers of the clients.

#### **3.9.2 Data collection Procedure**

Informed consent were requested and obtained from the respondents. Clients were assured of confidentiality of information and data obtained. Clients were requested to answer the questions truthfully. The questionnaire was then filled accordingly and quantitative data entered in the computer.

#### **3.10 Data Analysis Planned**

Data collected was coded and transferred to SPSS version 25 for analysis. Quantitative evidence gathered was analyzed by both regression (to test association between variables) and chi-square test (to compare the dependent and the independent variables). Descriptive statistics have been presented by use of the mean, percentages and standard deviation. Chi - square was used in determining statistical significance of the differences in proportions while logistic regression was used in identifying the association between the variables. The alpha value of 95% confidence interval, p value at less than 0.05. Charts and graphs and tables used to present the results.

Qualitative data collected have been analyzed by identifying the themes and presenting the results in narratives.

### **3.11 Study Assumptions**

1. That, all the selected respondents were to answer the questions asked by the researcher truthfully and honestly.
2. That the researcher could get adequate sample of respondents for the purpose of this study.
3. It is anticipated that, errors during study analysis were minimal.

### **3.12 Study Limitations**

This was an institutional based study and therefore the findings were not to be generalized. Recommendations drawn from this study were not expected to be similar to other studies carried out in other areas other than at Mathare National and referral hospital in Kenya. This being Cross sectional study, the information was obtained at one point in time hence could not be used to show trends.

### **3.14 Ethical Considerations**

There were no monetary rewards/gains to the participants, and neither were there any risks involved in this study. The participants had no obligation to answer questions they felt uncomfortable to answer. Researcher obtained permission/clearance from Kenyatta Hospital ethical and research committee and Mathari Hospital Research and education committee before starting the research activity, informed consent was obtained from the respondents. Researcher

ensured participants confidentiality and there were no indication for writing names in the filled questionnaires.

### **3.18 Dissemination plan**

Upon completion of the study, a copy of this report has been kept at the University of Nairobi Library and at the Mathare teaching and referral hospital. A report has also been made to MNTRH. Publishing will be on peer review journals.

## **CHAPTER FOUR: RESULTS**

### **4.0 Introduction**

This chapter presents the results from this study. The results have been organized according to the study objectives on the determinants to relapse in substance abuse among patients diagnosed with substance abuse at Mathari teaching and referral hospital. The specific objectives include the biological, social and psychological determinants to relapse in substance abuse.

This study intended to interview 113 respondents. All eligible respondents were reached and they participated in this study giving a response rate of 100%. The alpha value stood at 95% confidence level while the p-value was less than 0.05.

### **4.1 Demographic Characteristics of the caregivers of patients with relapse in substance abuse**

#### **4.1.1 Age of the caregivers**

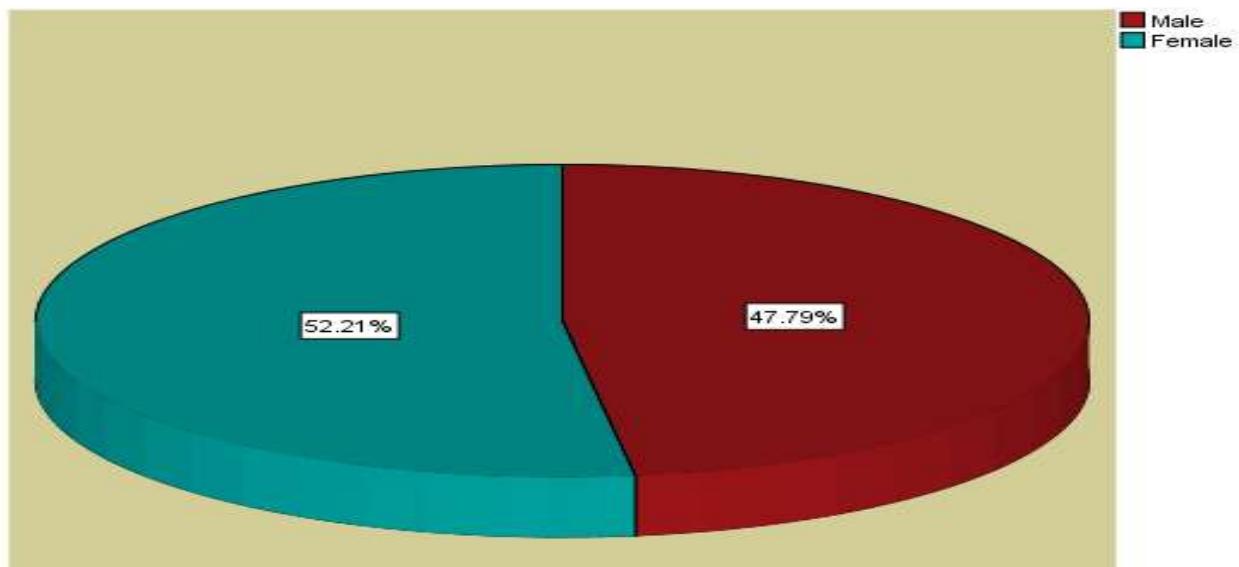
The respondent's age ranged from 20 and 70 years and a mean of 45 years. A higher percentage 36.3% of the respondents were aged between 31 and 40 followed by those who were between ages 41 and 50 years old. The least number of respondents were those who were above 70 years. Those respondents who were between ages 31 and 40 were majority at 63.7%. Age of the caregivers was statistically significant ( $p < 0.05$ ) as shown on table 4.1 below.

**Table 4.1: Age of the caregivers**

Characteristics		Frequency (n)	Percent (%)	P value
Age of the caregivers	20 – 30years	8	7.1	<b>0.05</b>
	31 – 40 years	41	36.3	
	41 – 50 years	31	27.4	
	51 – 60years	21	18.6	
	61 – 70 years	10	8.8	
	71 – 80 years	2	1.8	
	Total	113	100.0	

#### 4.1.2 Sex

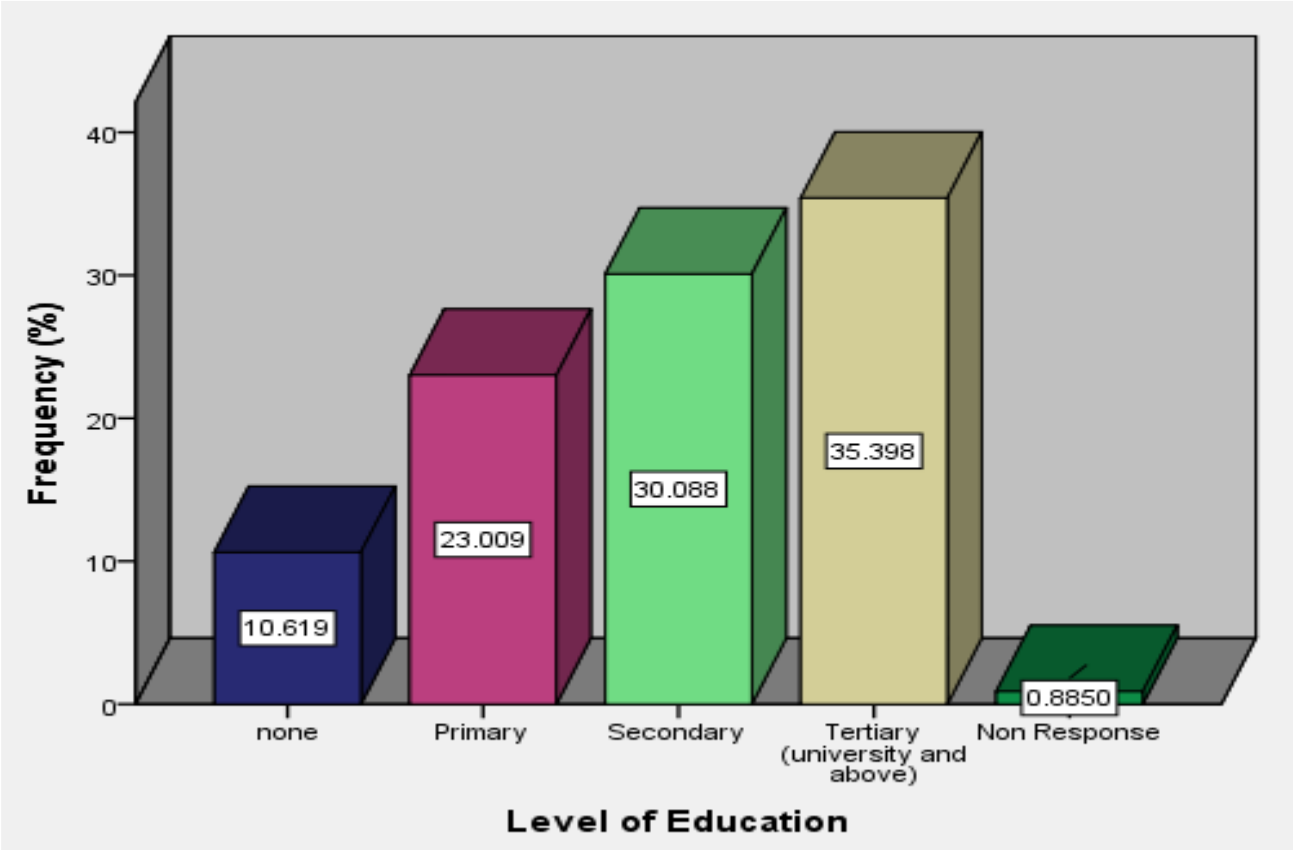
Figure 4.1 shows the number of female respondents were more than that of males in proportion of 52.2% vs. 47%.



**Figure 4.1: Gender of the caregivers**

**4.1.3 Level of education of the caregivers**

Out of the 113 participants, a higher percentage of the respondents had tertiary education (35.4%) Respondents with secondary education were more compared to primary education (30.1% vs. 23%). However there were those who had no formal education (10.6%) One respondent opted not to give his level of education. 0.9% as indicated in figure 4.2.

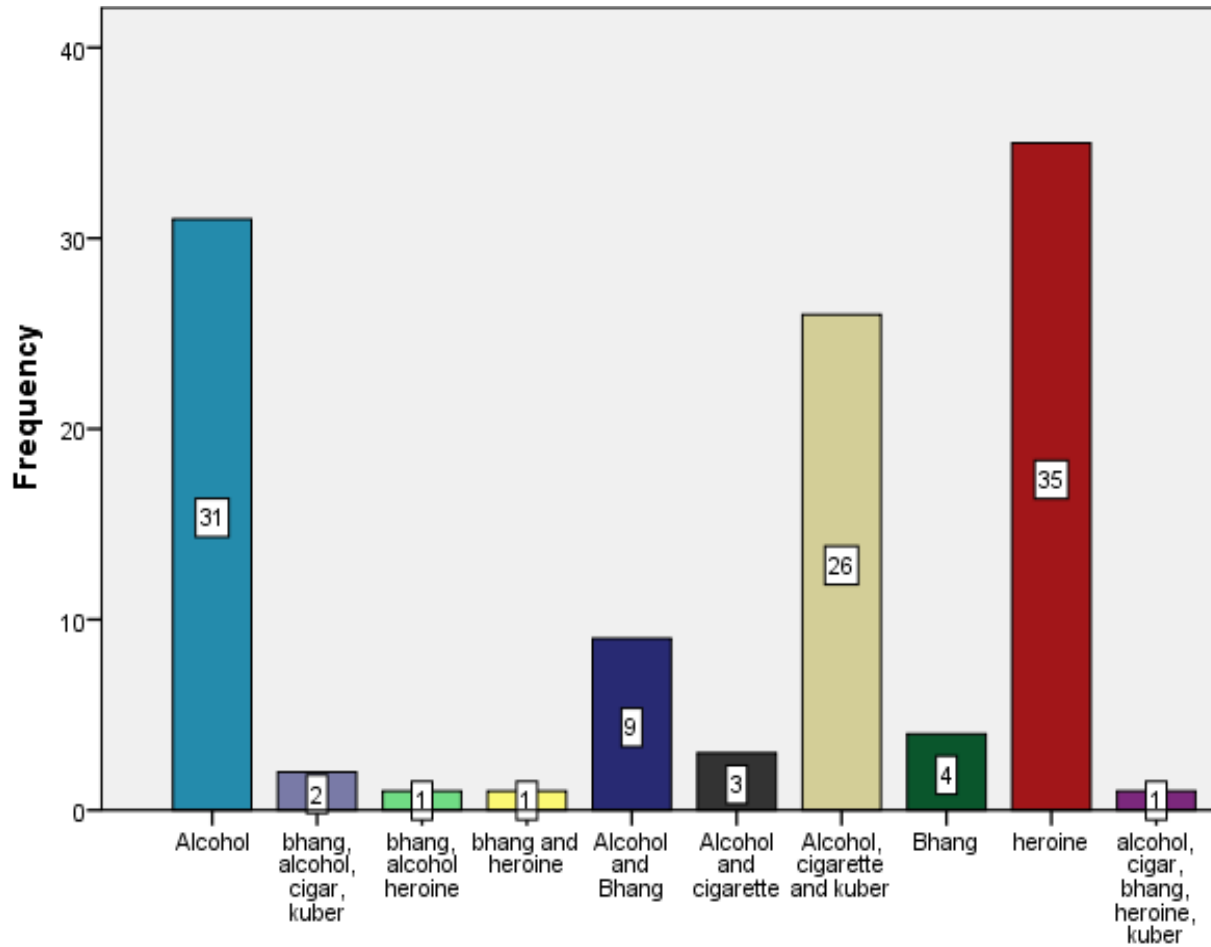


**Figure 4.2: Level of education**

**4.1.4 Type of drug abused**

On the type of drugs abused a higher percentage of the respondents said that majority of their patients were taking heroin 31% followed by those who were taking alcohol alone at 27.4%.

Those who were taking bhang alone represented 3.5%. However there were those who were taking more than one drug. 23% said that their patients were taking alcohol, cigarettes and kuber while those ones who were taking alcohol and bhang were 8% as shown in figure 4.3 below.



**Figure 2.3: Type of Substances Abused**

#### 4.1.5 Marital status of the caregivers

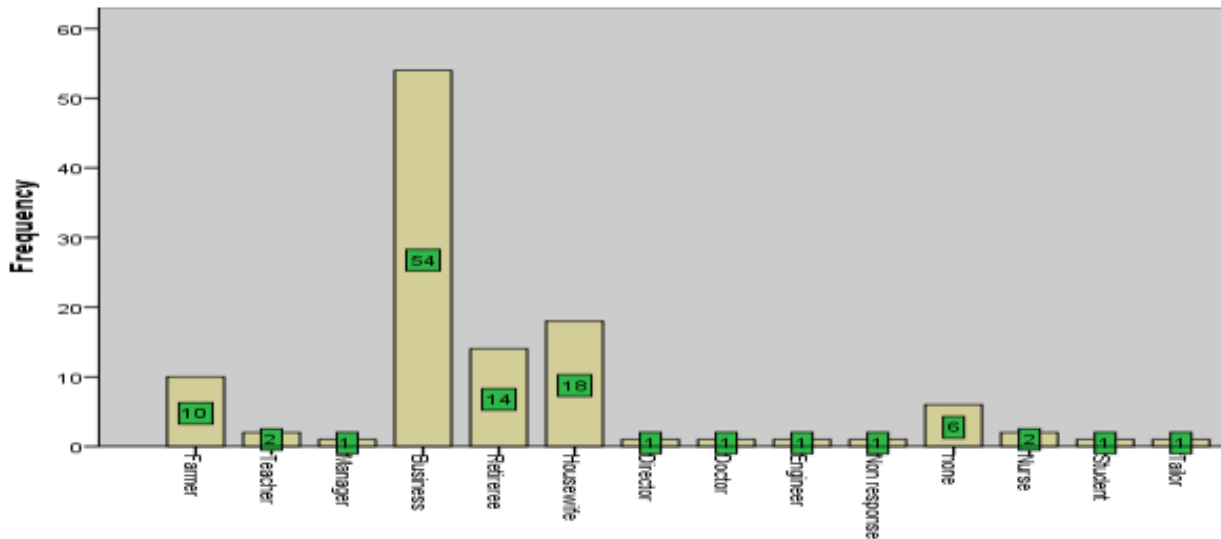
As shown in table 4.2 more than half (55.8%) of the caregivers were married. Single were more than widowed and separated combined as shown below.

**Table 4.2: Marital Status**

		FREQUENCY (n)	PERCENT (%)
MARITAL STATUS	SINGLE	32	28.3
	MARRIED	63	55.8
	WIDOWED	9	8.0
	SEPARATED	9	8.0
	TOTAL	113	100.0

#### 4.1.6 Occupation of the caregivers

As shown in figure 4.4, almost half (47.8%) of the caregivers were business people. 12.4% said that they had retired from service. However there were others who said that they were housewife's (15.9%) See figure 4.5 below.



**Figure 4.4: Occupation of the caregivers**



#### 4.1.7 Relationship with patient

Table 4.4 summarizes the relationship the caretakers had with the patient. A higher proportion of the respondents said the patient was their father (19.5%), grandfather (15.9%), mother (16.8%) as shown below.

**Table 2.4: Relationship with the patient**

	Frequency	Percent
Mother	19	16.8
Brother	11	9.7
Husband	1	0.9
Aunt Nephew	4	3.5
Son	16	14.2
Father	22	19.5
Sister	4	3.5
Uncle	16	14.2
Cousin	1	0.9
Grand Father	18	15.9
Non Response	1	0.9
Total	113	100.0

## 4.2. Biological determinants and relapse substance abuse disorder

### 4.2.1 Age of the patient on substance abuse relapse

Respondents' age varied between ages 18 and 53 years with the youngest being age 18 and the oldest 53 years. This is shown on figure 4.6 below.

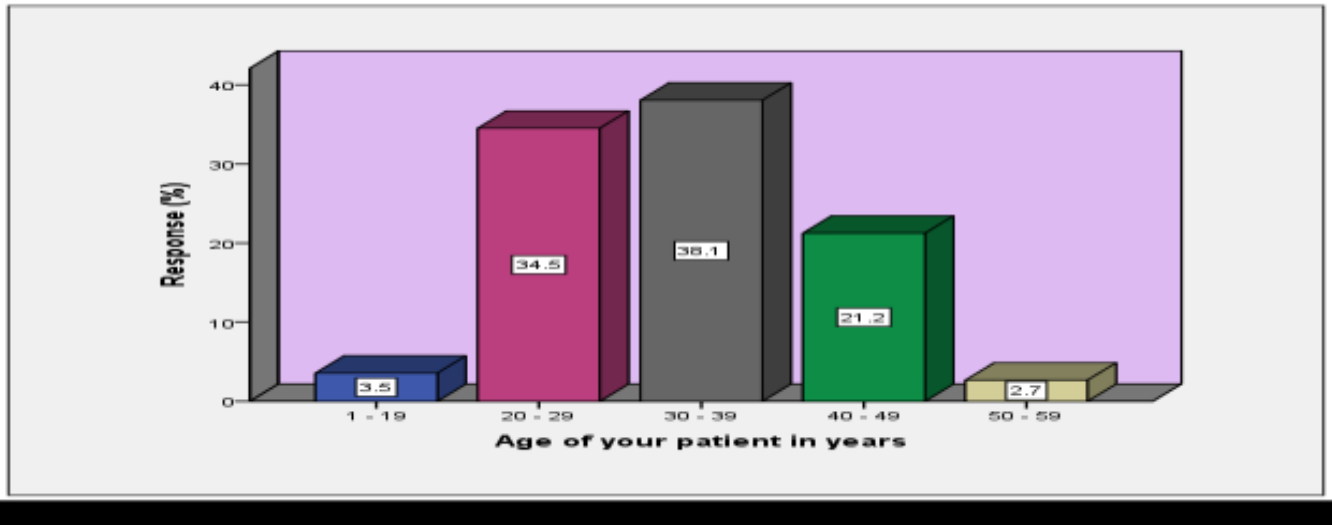


Figure4.6: Age of the patients

### 4.2.2 Sex of the patients

82.4 % of the respondents were males while the females were 18.6 % as figure 4.7 indicates.

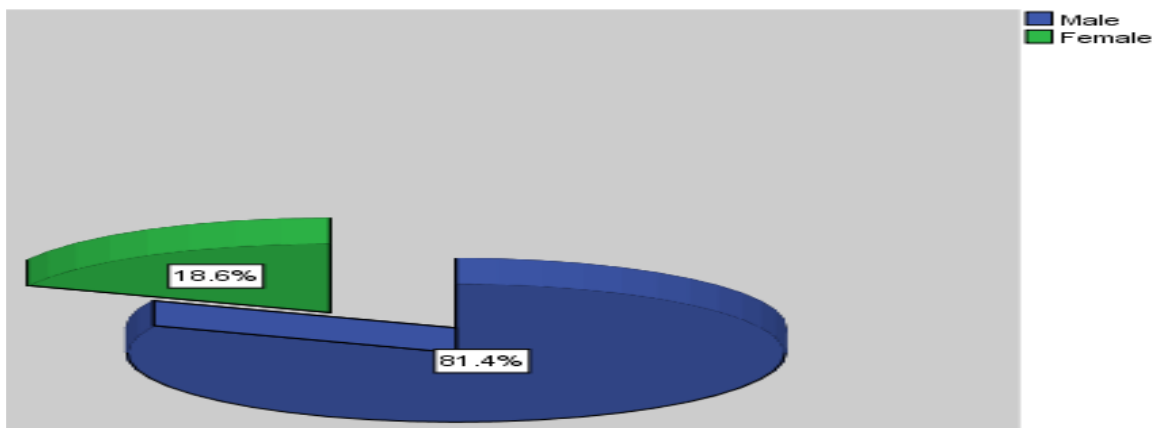


Figure 4.7 Patients gender

**4.2.3 Marital status of the patients**

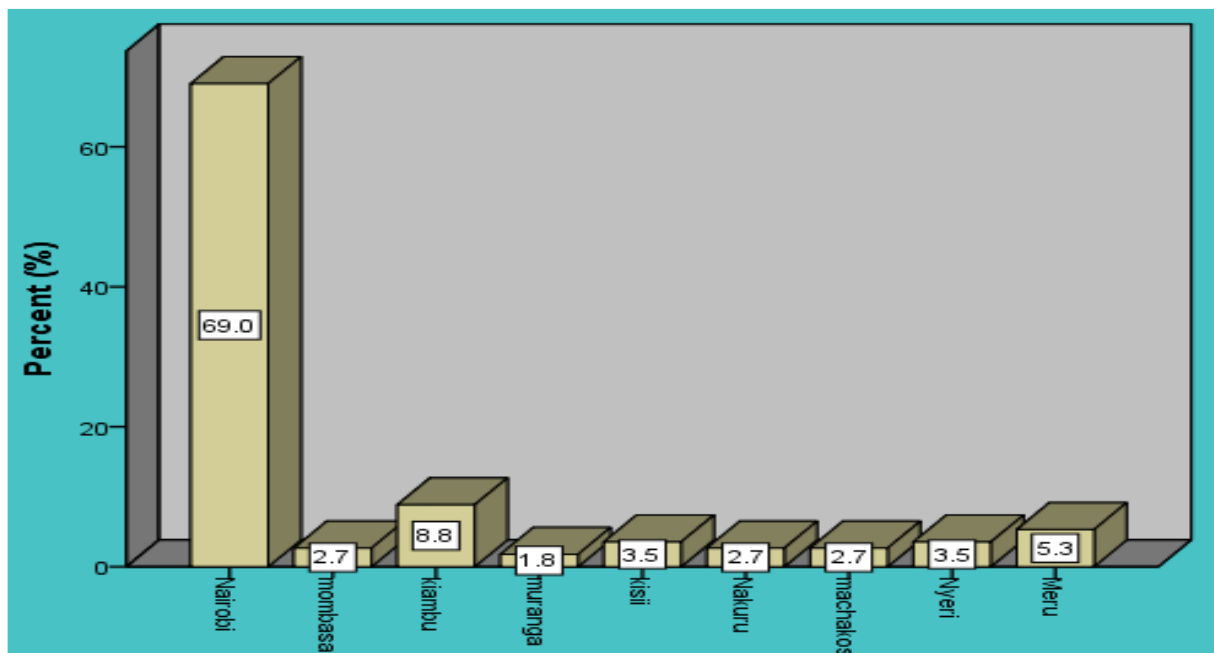
66.4% were single compared to 23.9% who were married. Widowed represented 5.2% as table 4.5 below shows.

**Table 4.5: Marital Status of patient**

	Frequency	Percent
Single	75	66.4
Married	27	23.9
Widowed	6	5.3
Divorced	2	1.8
Separated	2	1.8
Non response	1	.9
Total	113	100.0

**4.2.4 Patients Residence**

A higher percentage, 69 % of the respondents were from Nairobi County followed by Kiambu county 8.8 % as shown in figure 4.7.



**Figure 4.7: County of Residence**

#### 4.2.5 Family history of drug abuse

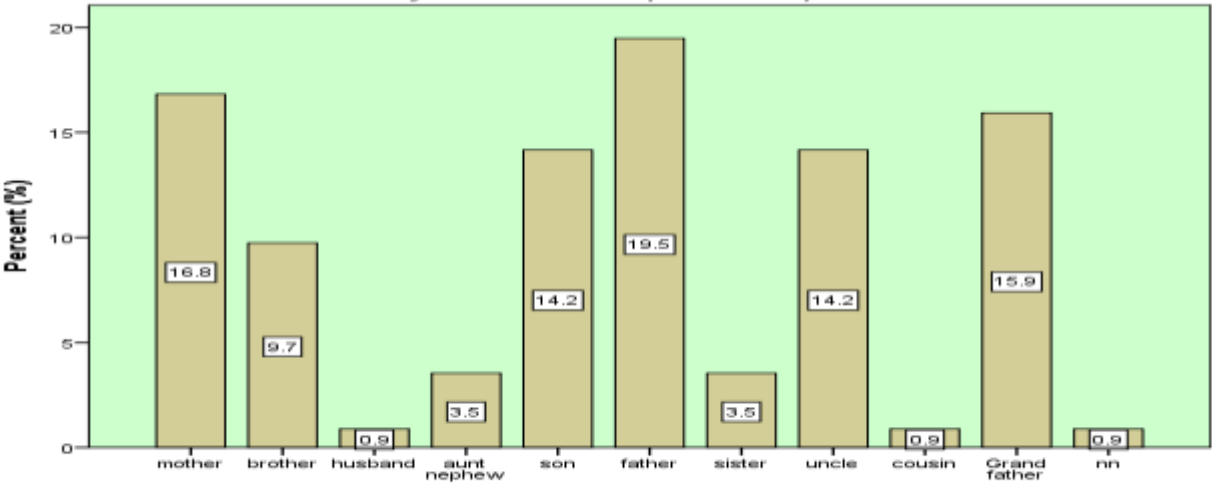
Those respondents who said that their patients had a family member who was also abusing drugs were less than those who said that they had no relative using drugs (43.4% vs. 56.6% ).

**Table 4.6: Family history of drug abuse**

	FREQUENCY	PERCENT (%)
Yes	49	43.4
No	64	56.6
Total	113	100.0

**4.2.6 Family members related to the patient abusing drugs**

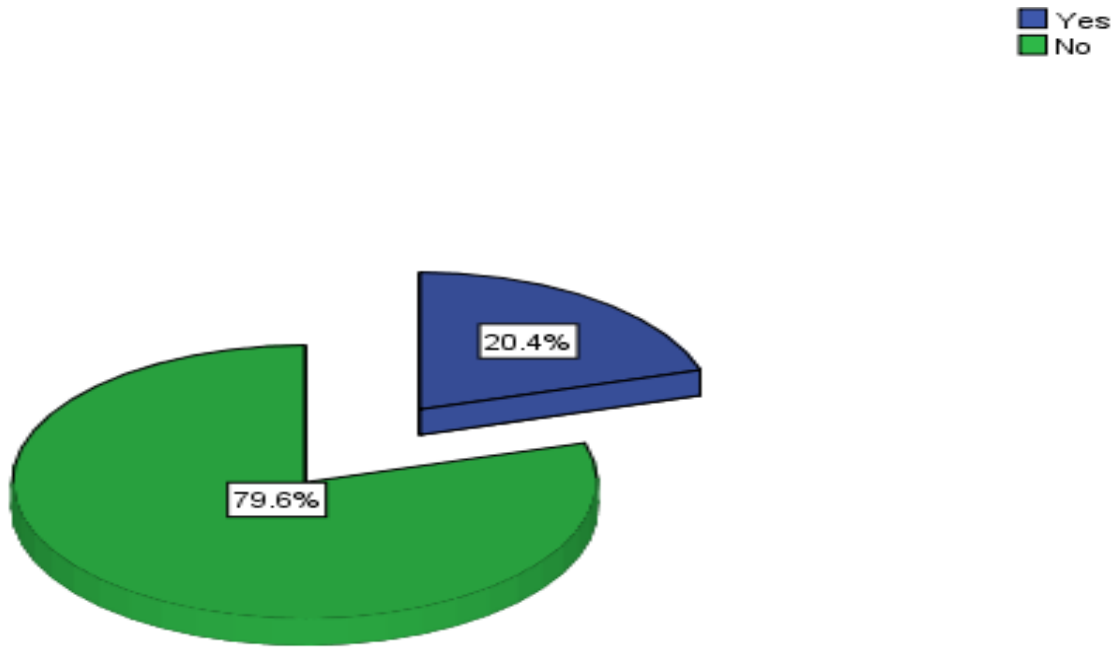
Those who said that their sons were also taking drugs were more than the rest of the patients (12.4%). This was followed by those who said that it was their uncle and father (7.1% & 6.2% respectively).



**Figure 4.8: Relationship between the patient and family members who are also using drugs**

**4.2.7 Patients of substance abuse relapse with a chronic disease**

Of the 113 respondents, 79.6 % said that they were suffering from chronic illnesses as shown in figure 4.8. These included schizophrenia, bipolar disorders, ADHD, HIV infection among others.



**Figure 4.8: Co morbidity among substance abuse patients**

#### 4.2.8 Patients of substance abuse relapse access to food and other basic needs

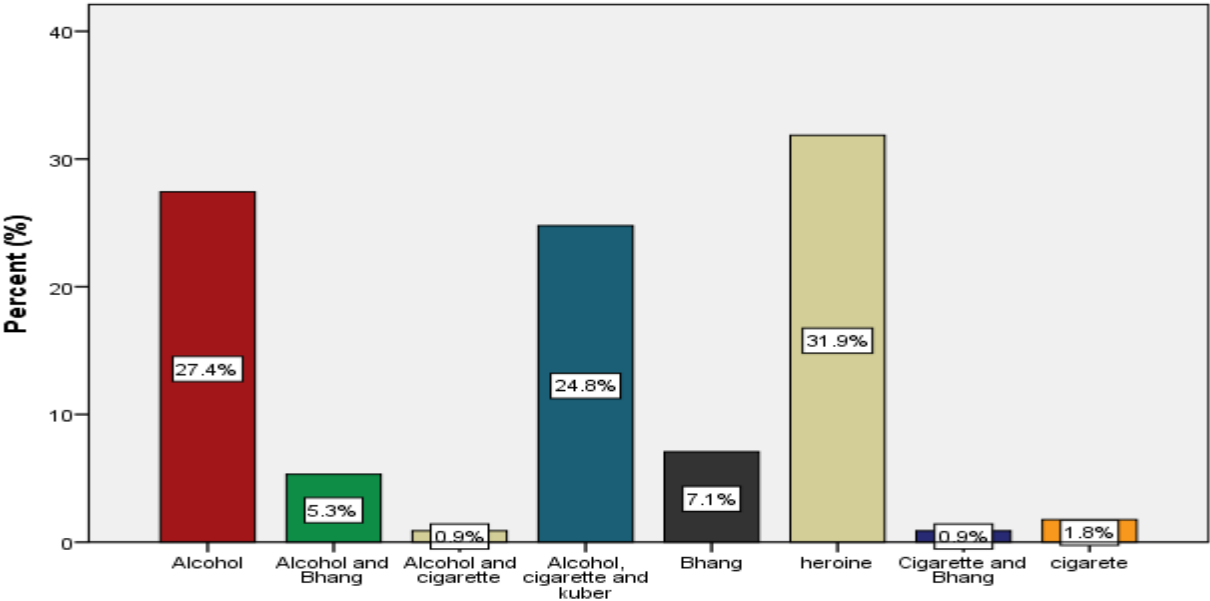
Table 4.7 show that most (85.8%) of the patients had a good access to food and other basic needs while the rest 14.2 % had difficulties in getting.

**Table 4.7: Access to basic needs**

	Frequency (n)	Percent (%)
Yes	97	85.8
No	16	14.2
Total	113	100.0

**4.2.9 The Most abused drug(s) by the patient**

When the respondents were asked to give the mostly abused drug by their patient, these were their responses: heroine 31.9%, alcohol 27.4% and a combination of alcohol, cigarette & kuber 24.8% were almost equal in number.



**Figure 4.9: Mostly abused drugs**

**4.2.10 The Duration the patient has been of taking the drug(s)**

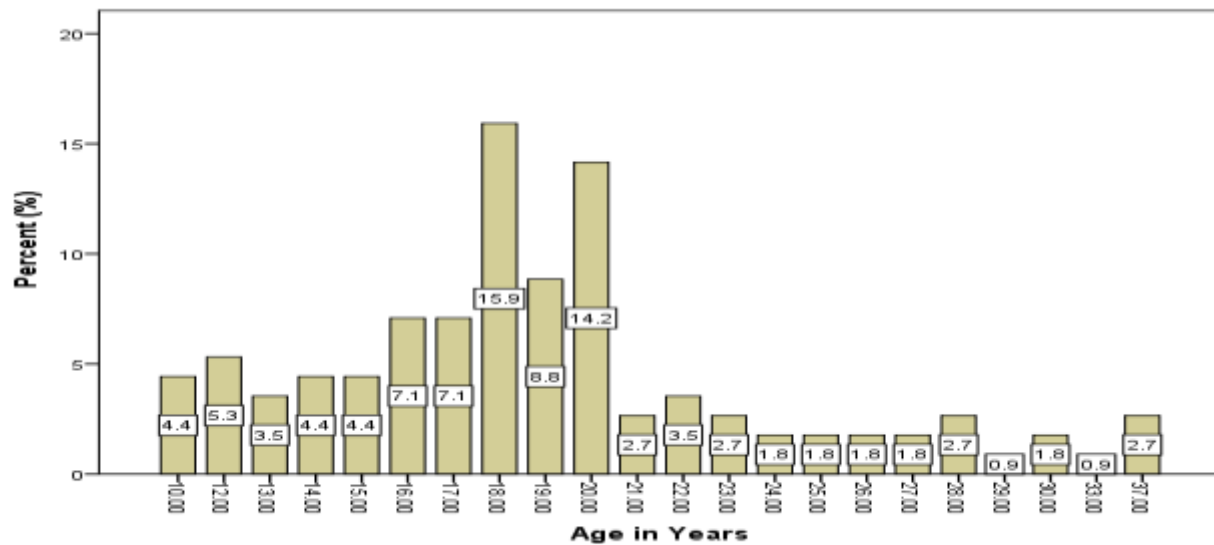
On the duration that the patients had been abusing the drugs the shortest time reported was one year (1.8%) and the longest period reported was 32 years by one patient. The mean duration was 12 years with standard deviation of 7.4 as shown on table 4.8 below.

**Table 4.8: Duration of drug abuse**

Mean	11.99
Median	10.00
Mode	10
Std. Deviation	7.381

**4.2.11 Age at onset of drug abuse**

On the age when the patients started using the drugs, the earliest age was 10 years and it was reported by 2 respondents ( 1.8%) while the respondents who started taking the drugs at an older age were 37 years old (2.7% n=3). Majority of respondents (53 %) started using drugs at the age of between 16 years and 20 years.



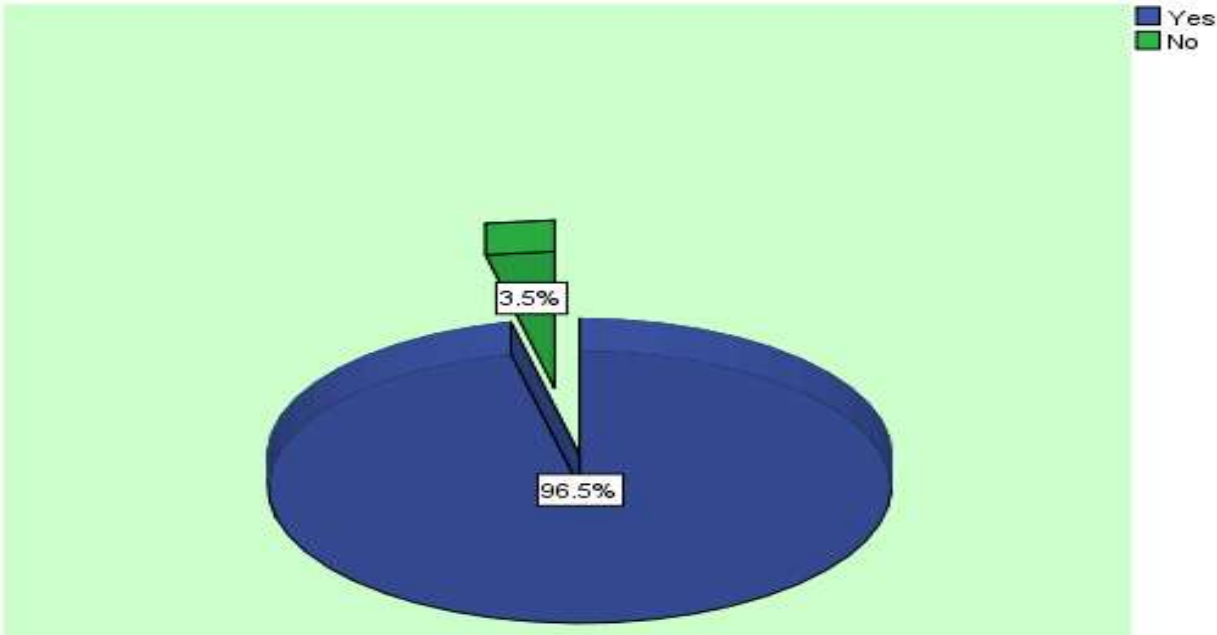
**Figure 4.10: Age at onset of drug abuse**



**4.3. Social determinants and relapse substance abuse disorder**

**4.3.1 Having friends who also abuse drugs**

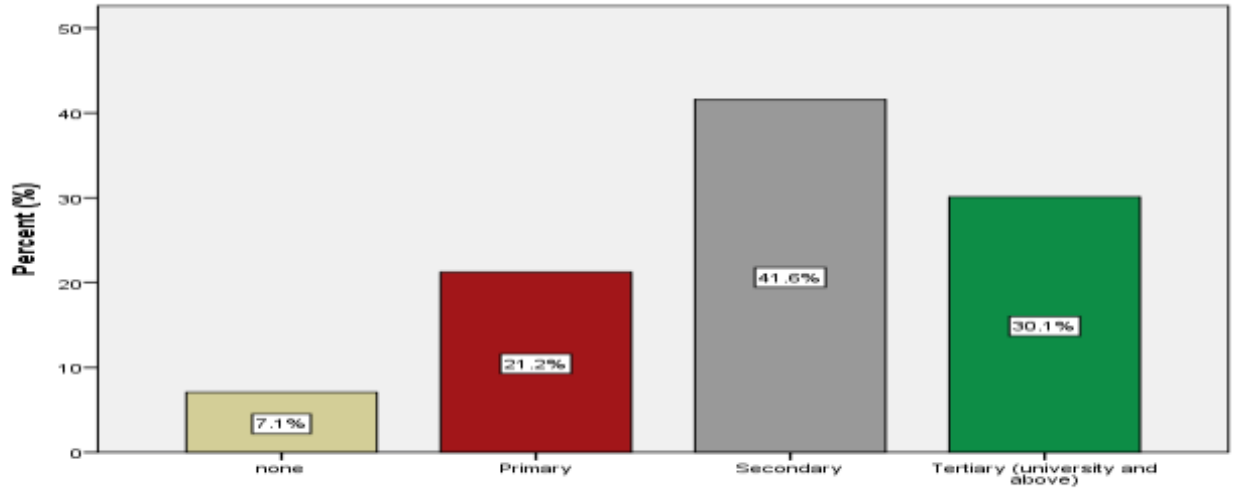
As shown in figure 4.11, majority (96.5%) of the patients had friends who were taking drugs. Those who did not have friends who were taking drugs were 3.5%. On the type of drugs their friends were taking, a higher percentage were taking alcohol cigarettes kuber (22.1), alcohol alone was abused by 21.2% and heroine 19.5% .



**Figure 4.11: Peer influence**

**4.3.2 Level of education of patients.**

Analysis on patients level of education found that majority of the respondents had attained secondary education (41.6%), followed by tertiary education 30.1%. Those who had no formal education were the least (7.1%). See figure 4.12 below.



**Figure 4.12: Level of education**

### 4.3.3 Patient Occupation

Results from this study have shown that majority (59.3%) were unemployed. Those who had employment were 27.4%.

**Table 4.9: Occupation**

Characteristics	Frequency (n)	Percent (%)
Employed	31	27.4
<b>Unemployed</b>	<b>67</b>	<b>59.3</b>
Student	14	12.4
Non response	1	.9
Total	113	100.0

**4.3.4 Accessibility of drugs**

Majority (51.3%) of the respondents said that the drugs were readily available, and 26.5% said the drugs were cheap and affordable.



**Figure 4.13: Access to Drugs**

**4.3.6 Duration of illness**

29.2% of the patients had been admitted at the hospital due to relapse for a period of between one to 3 months. However there were others who said that they had stayed at the hospital for a period of between one to two years (19.5%).

**Table 4.10: Duration of illness**

	Frequency	Percent (%)
Non Response	5	4.4
less than one week	7	6.2
1 - 3 weeks	11	9.7
one to 3 months	33	29.2
4 months to 6 months	16	14.2
7 months to 9 months	2	1.8
one year to 2 yrs	22	19.5
3 to 5 years	10	8.8
more than 5 years	7	6.2
Total	113	100.0

**4.3.7 No of relapses in a year**

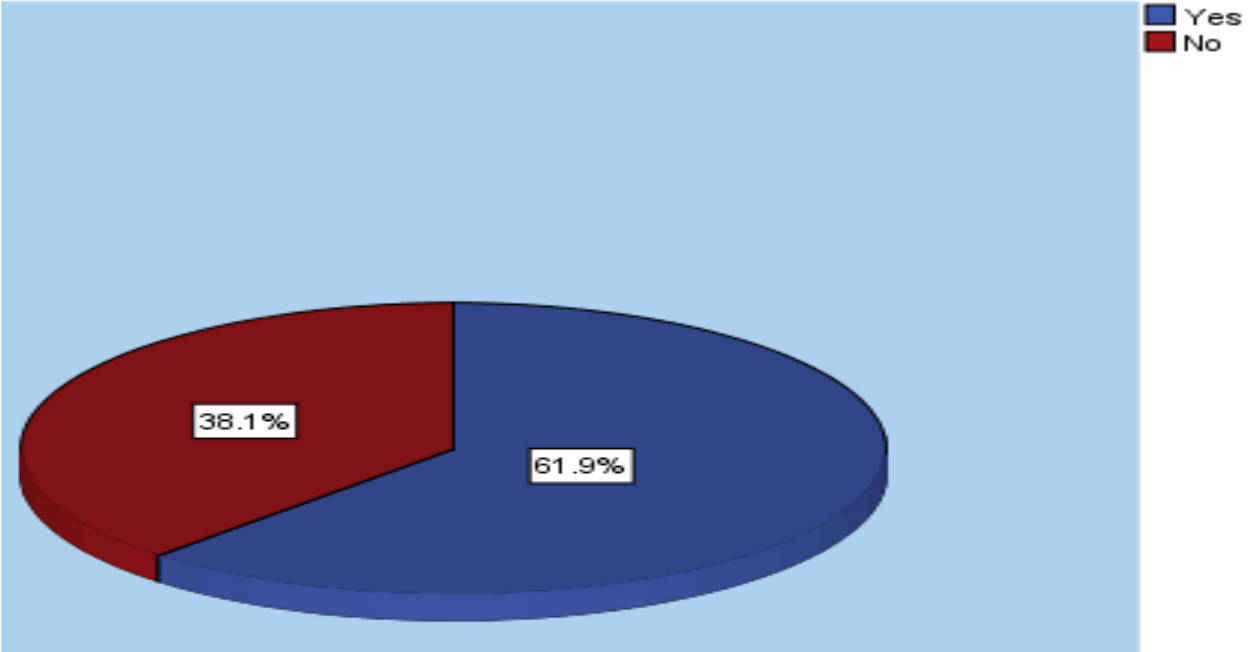
Majority (51.3%) of the patients experienced at least two relapses in a year. The rest (48.7%) had more than three episodes of admission.

**Table 4.14: Frequency of relapses**

	Frequency	Percent
Two	58	51.3
Three or more	55	48.7
Total	113	100.0

**4.3.8 Medical insurance**

The chart below shows that majority (61.9%) of the patients had a medical insurance while the rest 38.1% didn't have any form of insurance. For those who had no insurance payments were being made by themselves, parents and friends.



**Figure 4.15: Medical Insurance**

**4.3.9 Drug Compliance**

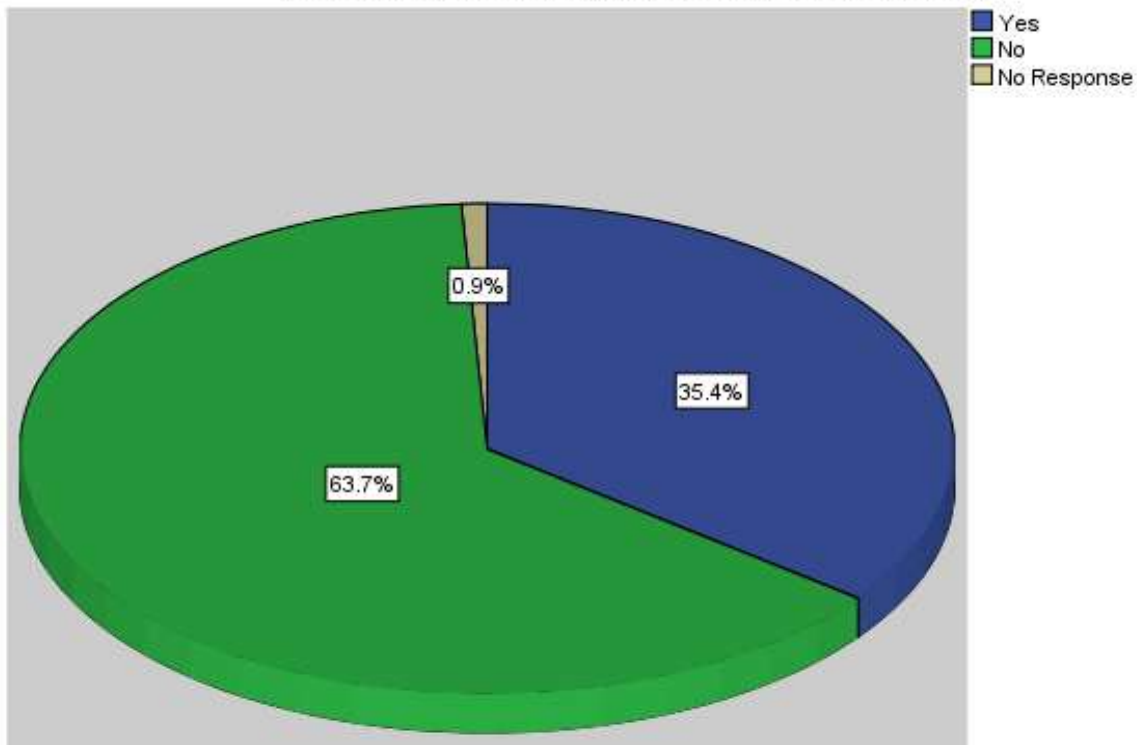
Result on table 4.11 below shows that most (69.9%) of the patients were taking their drugs well without missing any dose. While those who were not adhering to medication were 29.2%.

**Table 4.11: Adherence to medication**

	Frequency	Percent (%)
Yes	79	69.9
No	33	29.2
Non Response	1	.9
Total	113	100.0

**4.3.10 Support Groups**

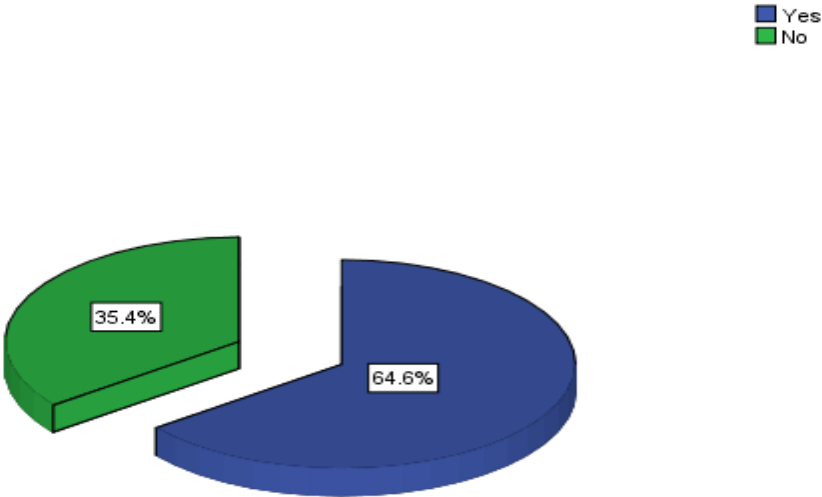
As shown in figure 4.16 most (63.7%) of the patients were not in support groups. Those patients who were in support groups were 35.4%.



**Figure 4.16: Being in a Support Group**

**4.3.11 Feeling like stopping using the drugs**

From figure 4.17 below shows a higher percentage (64.6%) of the respondents said that their patients wanted to stop using the drugs.



**Figure 4.17: Feeling like stopping use of addiction drugs**

**4.3.12 Conflicts affecting relapse**

59.3% of the patients were experiencing conflicts within the family that was predisposing to more relapses.

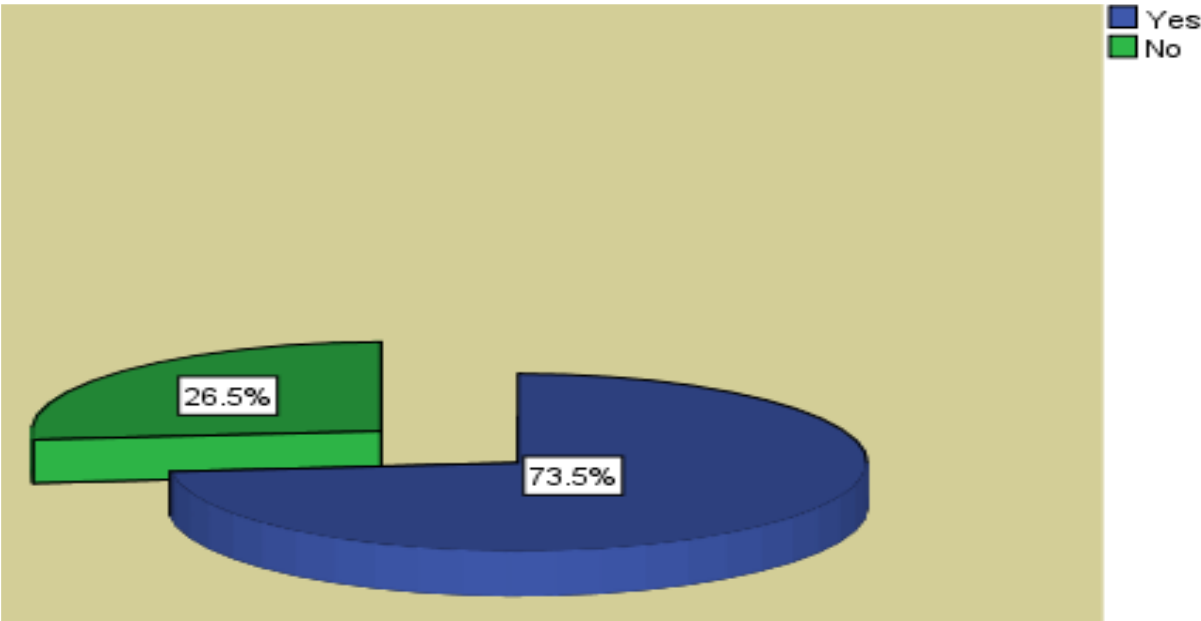
**Table 4.12: Presence of conflicts that affect drug abuse**

	Frequency	Percent
Yes	67	59.3
No	46	40.7
Total	113	100.0

**4.4. Psychological determinants and relapse substance abuse disorder**

**4.4.1 Taking drugs as a coping mechanism to stress**

Results indicate that majority (73.5%) were taking drugs as a coping mechanism when they were faced with negative life events and stresses.

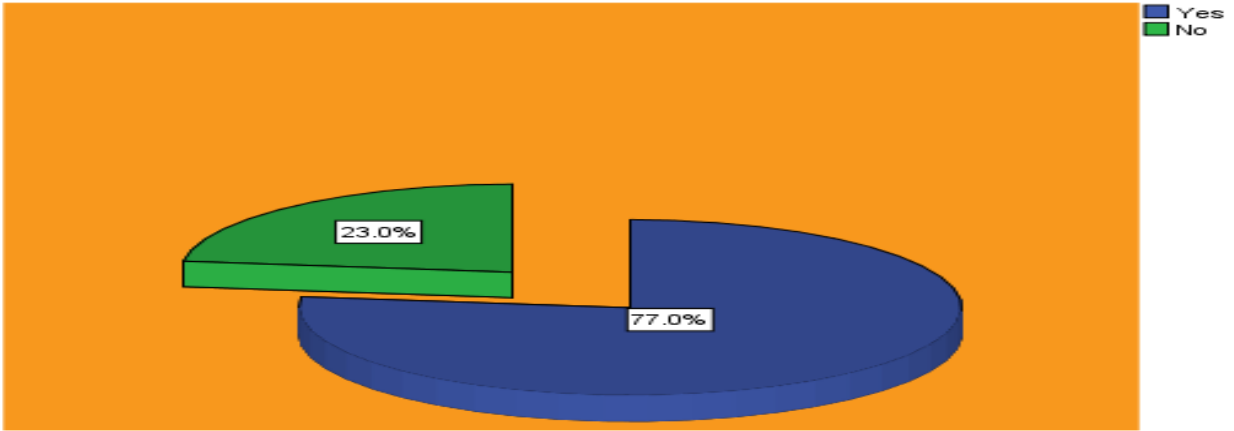


**Figure 4.19: Taking drugs as a coping mechanism to stress and conflicts**

**4.4.2 Personality problems affecting drug abuse**

Most, (77%) of the patients had personality problems with the introverts having the highest 36.3% proportion. Those who said that they never had personality issues were 26%.





**Figure 4.20: Prevalence of personality problems that affect drug abuse**

#### 4.4.3 Negative thought

The table below shows that those patients who had negative thought were comparable with those who had no negative thoughts (37.2% vs. 62.8%) with majority having negative thoughts.

**Table 4.13: Prevalence of negative thoughts**

	Frequency	Percent
Yes	42	37.2
No	71	62.8
Total	113	100.0

#### 4.4.4 Financial and unemployment problems affecting drug abuse

Majority (72.6%) of the patients had financial and unemployment problems that were causing stress to them and making them take drugs.

**Table 4.14: No. of patients affected by financial problems and unemployment problems**

	Frequency	Percent
Yes	82	72.6
No	31	27.4
Total	113	100.0

#### 4.4.5 Negative life events

As shown in figure 21 below, a higher percentage 62.8% (n=71) of the patients never attributed their present situation to negative life events they have ever experienced. Those who attributed their problems to the negative events that they were going through represented the remaining proportion 37.2 % ( n=42).



**Figure 4.21: Negative life events affecting drug abuse**

#### 4.4.6 Examples of negative life events contributing to drug relapse

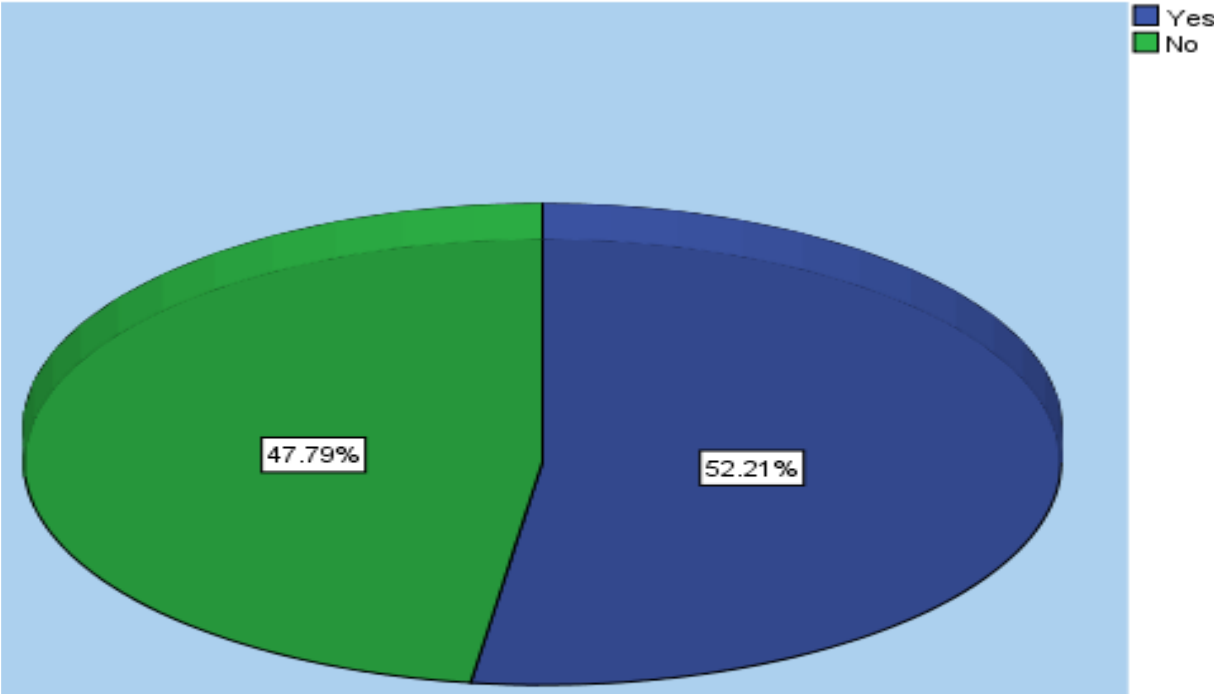
Table 4.15 below shows some of the negative life events that were contributing to substance abuse.

**Table 4.15: Negative life events leading to Relapse.**

Responses	Frequency (n)	Percent (%)
Separation of parents	3	2.7
Loss of one parent	5	4.4
Loss of an uncle	1	.9
Wife died	1	.9
Loss of brothers	2	1.8
Poverty	2	1.8
Disagreement and separation with girlfriend	1	.9
Disagreement between parents	6	5.3
Separation with girlfriend	2	1.8
Separation with wife	1	.9
Father jailed	1	.9
Loss of parents	2	1.8
Loss of job	6	5.3
Lost parents and job	1	.9
Suffering from <b>ADHD</b>	1	.9
Depression	1	.9
Relapse not associated with negative life event	72	63.7
Never gave response to this question	5	4.4
Total	113	100.0

#### **4.4.7 Positive coping mechanisms**

Results from study indicated that majority (52.2 %) of the patients' portrayed positive coping mechanism. These findings are represented in figure 4.21 below.



**Figure 4.21: Proportion of patients exhibiting positive coping mechanisms during stressful events**

## **CHAPTER FIVE**

### **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter makes a comparison of the findings of this study while at same time relating results to the overall aim and objectives, which was to determine the biopsychosocial determinants of relapse among patients diagnosed with substance related disorders at Mathari hospital, Kenya. Conclusions and recommendations for the entire study are also given.

The most significant findings of this study have been discussed further; the results have been compared to other researches carried elsewhere in other institutions and countries to determine the similarity and differences in the contribution of biopsychosocial determinants to relapse in substance abuse.

This study has established that of the 113 respondents interviewed, 81% were of the male sex. This differs to results from a similar study by Chen et al (2011) that attributed a high relapse rate to the psychological nature of the disease that makes the patient dependent to the drug. The present study showed that, biopsychosocial determinants contributed to the rise in the relapse rate in substance abuse in Mathari National Hospital. Therefore relapse in substance abuse is dependent on many factors that interact to cause ill health as also noted by Cohen, (2010).

#### **5.2 Discussion**

##### **5.2.1 Biological determinants and relapse substance abuse disorder**

Results from this study show that drug and substances use disorder is a big problem in Kenya, especially among the youths and young adults. This is in agreement with other countries like

USA that had prevalence rate of between 7 to 10 as per cent.( SAMHSA et al 2015) Jeewa et al 2009 indicated that the most affected group was between ages 18-29 years accounting for about 34%.

In the present study about 27.4% of the patients in MNTRH were taking alcohol. WHO 2014 showed that, alcohol was a major contributor to ill health causing 3 million deaths each year globally.

The cost of treatment and rehabilitation of drug abuse patients is a huge burden and this prompted most (61.9%) of the patients being treated in MNTRH having a medical insurance cover to cushion them from the huge hospital bills. These results were consistent with the NACADA 2012 report that indicated that managing drug abuse is expensive to the caregivers.

The study disagrees with research by Polich et al 2008 that showed that relapses recur within a period of 4 years, this study found out that relapse was dependent on specific drug of abuse and the various conflicts the patients were going through and also the environment where the patients live.

Result from this study showed that relapse could occur throughout the life of the patients as long as there have not been corrective measures instituted to prevent recurrence. This is contrary to a research by Derek et al, 2004 and another study by Carson et al 2016 on alcohol that indicated that relapses were common among the youths as compared to older adults.

Unlike a study by Perry et al 2016 that found out that there was a sex difference in the way relapses were occurring among patients with substance use disorder, this study found no statistical significance between relapse and patients sex. Although this study showed that there

were more male patients with relapse compared with the females, this only occur by chance and could not be predicted.

The results of this study found that despite majority (85.6%) of the patients being well supported by their families, and being able to get food and other basic needs, still these patients were experiencing frequent episodes of substance abuse. This was contrary to finding by Campbell and Ettore 2011 who noted the relapses were few among patients who were well supported by their family members. This therefore means that reducing the prevalence of relapses in substance abuse requires more than just social and physiological support.

Previous studies by Blum 2014 and Sharma 2012 had compared education level and relapse with those with lower education showing high relapses rates compared to those with higher levels of education. In the Present study, majority (71.7%) of the patients had post-secondary education yet they were experiencing relapses.

The study agrees with previous studies by Kilgus (2018) that personality disorders had a role in relapse of substance abuse and related disorders. These disorders included ADHD and bipolar disorders among others. There were similarities between previous study carried out by Robert (2006) and the present study. These studies have identified a relationship between co morbid mental disorders and relapse among patients with substance abuse. These disorders include schizophrenia, and bipolar disorders among others.

The studies found out more than 66.4% of the patients were not married. Marital difficulties like divorce, separation and other negative life events like loss of a family member or a friend were

directly associated with the rise in the number of relapse (Moos 2011 and Farkhondeh 2015). Therefore the two studies are in agreement.

### **5.2.2 Social determinants and relapse substance abuse disorder**

The present study has shown that peer influence has a role in the number of relapses one encounters. In this study majority, 96.5% of the patients had friends who were taking drugs which were similar to what their friends or peers were taking. Similar studies by Naidoo 2011 and Mohammed 2012 also noted that peer influence could predict relapse in substance abuse. Therefore the influence from friends and peers is a determinant in predicting relapse in substance abuse.

The environment where one grows has a direct effect on what one learns or gets exposed to. This study agrees with other studies (Hempill 2011 and Rednedge, 2013) which have shown the effect on exposing youths to drugs. These include the ability to get the drug at a cheap price and easy availability of the drugs to the youths.

The research found no correlation between family support and relapse in substance abuse. This was because almost all the patients were being supported by their families and yet they were getting relapses throughout the year. This agrees with a study by (Annis, 2013).

The present study established that most, 70% of the patients were from Nairobi where it is believed that the drugs are available and the patients can afford them. These findings are having similar implications on the number of relapses one is likely to get within a given period of time. This is in agreement with a study by (Briefly, 2014 and Heather, 2010).



The rising number of youths who are unemployed and had financial difficulties have been identified in this study and in previous studies (Martin, 2012, Glyn, 2015) as the most vulnerable group for both drug abuse and relapses.

### **5.5.3 Psychological determinants and relapse substance abuse disorder**

In this study most 70% of the patients were battling different types of stress in their life's. This included loss of loved ones, conflicts within the family, separation between parents or spouses. A study by Hames 2013 indicated that these patients were unable to recover from the drugs while at the same time dealing with stress. Both these studies have demonstrated a level of similarities and stress management is recommended.

Previous study (Costa, 2010) has shown that personality disorders were prevalent among patients with relapses in substance abuse. This study showed that more than 80% of patients with relapse had personality problems of which the introverts were more than the rest.

In this study, having appropriate coping mechanism when faced with conflicts was lacking among most patients on drug abuse. These included poor relationships, disagreement in marriage and at work place. This agrees with Kistensamy 2009, who identified poor coping mechanisms as high risk for relapse in substance abuse since the patients lack self-control. Stress forms part of daily activities that everyone has to handle regularly. Both these studies promote healthy coping mechanism.

### **5.3 Conclusion**

The most affected age group for drug abuse were the adolescents and young adults aged between ages 20 and 40 years with most of them residing in Nairobi County and in other main urban areas. Study established that the drugs of abuse were readily available and most of the patients could afford them. Most of the patients were unemployed and were economically unstable. Most of them associated their problem to the conflicts they were facing both at the family, and the community level causing them stress that they were unable to control or cope with.

The researcher has drawn the following conclusions based on the results of this study

- Biological determinants that contributed to relapse among patients with substance abuse included patients' age that showed that the most at risk age group for drug abuse were young people aged between age 18 and 20 years and the type of drug(s) of addiction the patient was abusing in most cases
- Social determinants that contributed to relapse among patients with substance abuse were the frequency of conflicts within the family.
- Psychological determinants that contributed to relapse in patients in MNTRH were stress caused by financial and unemployment problems.

### **5.4 Recommendations**

The following recommendations have been suggested basing on the study findings:

- There is need for the national and county government together with other development partners to reduce access to drugs of abuse by the youths by instituting and implementing appropriate legislations since most of the drugs that were causing relapse were easily available and affordable mostly in Nairobi and in other parts of the country.

- To reduce relapse and mental health problems, there is need to educate the youths in conflict resolution within the family and how to adopt healthy coping mechanisms when faced with stressful events
- The government needs to urgently address the rising unemployment among the youths that is responsible for low socioeconomic status leading to stress.
- Need for parents and guardians to be available to counsel adolescent on drug abuse and effects. This is because the ages involved in initiation and consumption of drugs is mostly the youth in collages and university OR after school when they are unemployed and idle

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## **APPENDICES**

### **APPENDIX I: PARTICIPANT INFORMATION FORM**

I am **Paul Mutua Mwove**, pursuing a Master's Award of degree in Nursing at the University of Nairobi. As part of my course work, I will be carrying out a study on biopsychosocial determinants of relapse among patients diagnosed with substance related disorders.

#### **Purpose of study**

The purpose of this study is to identify contributing factors to relapse among patients diagnosed with substance related disorders for the purpose of planning and decision making to help reduce these relapses and its associated adverse the health and social effects. The results of this study will also add to the body of knowledge to scholars.

#### **Anonymity and Confidentiality**

You are not allowed to indicate your name or any other identifier e.g. phone number or photo on the questionnaire that will be provided and this will protect the information that you will provide and make it more confidential. The codes that have been used to label the questionnaires are enough to identify them. It will take about 15 minutes or less for you to complete this questionnaire.

#### **Potential Risks**

This is not an experimental or interventional study therefore no risks or harm is anticipated.

## **Participation**

Decision to participate in research is voluntary. You have freedom to decline participation in the study and you can withdraw from the study at any time without injustice or loss of any benefits.

## **Benefits**

You will get information on ways to protect yourself from turning back to drugs after recovery. This will ultimately improve the quality of your life. Your participation will also help us in getting possible reasons to the increasing number of relapses and thus help in designing strategies to address this problem. The county, National government and health partners can use the findings in formulating guidelines and policies on management of substance abuse disorder.

**APPENDIX II: CONSENT FORM**

I have read this consent form. I have discussed this research study with a study counselor. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study. I understand that all efforts will be made to keep information regarding my personal identity confidential.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

**Participant name:** \_\_\_\_\_

**Participant signature / Thumb stamp** \_\_\_\_\_ **Date** \_\_\_\_\_

**Researcher's statement**

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and have willingly and freely given his/her consent.

**Researcher's Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Signature** \_\_\_\_\_

For any clarification contact the following;

**Principal investigator: Paul Mutua Mwove**

### APPENDIX III: QUESTIONNAIRE

**Topic:** Biopsychosocial determinants of relapse among patients diagnosed with substance related disorders at MNTRH.

#### **INSTRUCTIONS**

- Do not write any information that may identify you. This includes your name, phone number, or identification card number
- All information given are confidential.
- Questions are purely meant for academic purposes only.

#### **BIO DEMOGRAPHIC CHARACTERISTICS OF THE CARE GIVER**

1. What is your Age in years? -----
2. What is your gender?     Male                       Female
3. What is your level of education?  None                       Secondary  
 Primary             Tertiary (university and above)
4. Which drug(s) is your patient abusing? .....
5. What is your marital status?    Single  married  widowed  divorced   
separated
6. What is your occupation? .....
7. What is your relationship with the patient? .....

**PART A: BIOLOGICAL DETERMINANTS.**

1. What is the age of your patient in years \_\_\_\_\_
2. What's the sex of your patient?             Male             Female
3. What is the marital Status of your patient?
  - a.  Single    b.  Married    c.  Divorced    d.  Widowed
4. Where does the patient reside? (Write the village/estate) .....
5. a) Has any of the patients family members ever abused drugs in the past?  
 Yes             No  
b). If yes specify relationship with patient.....
6. a) Does the patient suffer from any other chronic infection/illness?  
 Yes             No  
b) If yes (specify) \_\_\_\_\_
7. Does the patient get enough food and other basic needs?  
 Yes             No
8. Which specific drug(s) of addiction is the patient abusing in most of the cases  
.....
9. For how long has the patient been abusing drugs? .....
10. At what age did the patient started using the drugs? .....

**PART B: SOCIAL DETERMINANTS**

1. Does the patient have friends who are using drugs of abuse?

Yes                       No

If yes which drugs.....

2. What is the patient's educational level?

None                       Secondary

Primary                       Tertiary (university and above)

3. What is the patient's occupation?

employed     unemployed     Student

4. Are the drugs the patient commonly abuses easily accessible?

Readily available  rarely available  cheaply available

5. For how long has the patient been ill (current relapse episode)? .....

6. On average how many times in a year does this illness (relapses) usually occur to the

patient after successful treatment?                       two     three or more

7. a).Do you have a medical insurance cover

Yes                       No

b).If NO, who pays patient treatment expenses? .....

8. Does the patient comply with taking prescribed medication when his/her condition is

under control (compliance)?                       Yes                       No

9. Does it stress the patient that he/ she have to stick to the current treatment plan?

Yes                       No

10. Does the patient belong to any support group                       Yes                       No

11. In the last one year, has the patient felt he/she should stop drinking or taking any other substance?       Yes       NO

12. Are there frequent conflicts within the family that you think can contribute to the frequent relapses       Yes       NO

**PART C PSYCHOLOGICAL DETERMINANTS**

13. Does the patient ever use any coping tactics e.g. smoking, drinking alcohol, chewing Miraa, aggression/fights, etc when faced with negative life events and stress

Yes       NO

14. a) Does the patients have any Personality problem (e.g. introvert, extrovert, impulsive behaviors, tendency to violence, quarrelsome, shy etc)       Yes       NO

b) If yes (specify) .....

15. Does the patient often have any negative thoughts?       Yes       NO

16. Does your patient suffer from financial or unemployment problems that cause stress to him?       Yes       NO

17. Are there negative life events that are associated with the present condition of the patient       Yes       NO if yes specify .....

18. Does the patient exhibit positive coping mechanisms when faced with stressful events?

Yes       NO



**APPENDIX IV: APPROVAL LETTER FROM MNTRH**

PAUL MWOVE MUTUA  
School of Nursing Sciences  
University of Nairobi

The Medical Superintendent,  
MNTRH,  
P.O BOX 40603,  
NAIROBI,

Dear Sir.

Ref: Letter of Authorization

I am a student at University of Nairobi undertaking a course for the award of a master's degree in Nursing. I am seeking approval to conduct study on biopsychosocial determinants of relapse among patients diagnosed with substance abuse disorder. The study findings will help in developing strategies that will address the increased rate of relapse among these patients and therefore protect them from the harmful effects of these drugs.

I hereby request for your permission to proceed.

Yours faithfully

Paul Mwove Mutua

*Medical Research to Committee*  
*[Signature]*  
*8/5/12*

## APPENDIX V: ETHICAL APPROVAL LETTER



UNIVERSITY OF NAIROBI  
COLLEGE OF HEALTH SCIENCES  
P O BOX 19676 Code 00202  
Telegrams: varsity  
Tel: (254-020) 2726300 Ext 44355



KENYATTA NATIONAL HOSPITAL  
P O BOX 20723 Code 00202  
Tel: 726300-9  
Fax: 725272  
Telegrams: MEDSUP, Nairobi

### KNH-UoN ERC

Email: [uonknh\\_erc@uonbi.ac.ke](mailto:uonknh_erc@uonbi.ac.ke)  
Website: <http://www.erc.uonbi.ac.ke>  
Facebook: <https://www.facebook.com/uonknh.erc>  
Twitter: @UONKNH\_ERC [https://twitter.com/UONKNH\\_ERC](https://twitter.com/UONKNH_ERC)

Ref: KNH-ERC/A/202

31<sup>st</sup> May, 2019

Paul Mutua Mwove  
Reg. No. H56/88254/2016  
School of Nursing Sciences  
College of Health Sciences  
University of Nairobi



Dear Paul,

**RESEARCH PROPOSAL: BIOPSYCHOSOCIAL DETERMINANTS OF RELAPSE AMONG PATIENTS DIAGNOSED WITH SUBSTANCE RELATED DISORDERS AT MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL, NAIROBI (P131/02/2019)**

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 31<sup>st</sup> May 2019 – 30<sup>th</sup> May 2020.

This approval is subject to compliance with the following requirements:

- a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
- c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
- f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- g. Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



**PROF. M. L. CHINDIA**  
**SECRETARY, KNH-UoN ERC**

- c.c. The Principal, College of Health Sciences, UoN  
The Director, CS, KNH  
The Chairperson, KNH- UoN ERC  
The Assistant Director, Health Information, KNH  
The Director, School of Nursing Sciences, UoN  
Supervisors: Dr. Irene G. Mageto (UoN), Dr. James Mwaura (UoN)

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## APPENDIX VI: MINUTES APPROVING THE STUDY AT MTRH



### MINISTRY OF HEALTH

#### MATHARI NATIONAL TEACHING & REFERRAL HOSPITAL

Telephone Nairobi

2654814/2337694

When replying please quote:

REF TRC

P. O. Box 40663-00100

NAIROBI

E-mail:matharireferral@gmail.com

Date: 20/5/19

MINUTES OF THE TRAINING AND RESEARCH COMMITTEE HELD ON 20/5/19 AT THE  
DEPUTY MEDICAL SUPERINTENDENT OFFICE

#### MEMBERS PRESENT

1. DR. Victoria Wamukhoma - chairperson
2. Ruth Makau - secretary
3. Nelson Mwangi - member
4. Peninah - member
5. Mary Mbugua - member
6. DR. Waweru - member

#### Absent with apology

1. Dr. Patricia Mwere
2. Julia Wangui
3. Rose Kuria

#### AGENDA

1. Confirming the previous minutes
2. Matters arising
3. Training request
4. Research authorization
5. AOB

	REMARKS	ACTION PERSON
Opening remarks	The Chair called the meeting to order at 11.30 am and Penina opened with a word of prayer.	

Min1:1/5/19 confirming the previous minutes	Members were taken through the previous minutes by Secretary. Minutes seconded by Dr. Victoria	
Min2:1/5/19 matters arising	<ul style="list-style-type: none"> <li>➤ The Room identified by CMED for storage of old books shelved not yet put-up, Dr. Wamukhoma to follow it up with Dr. Jumba</li> <li>➤ KEMU, MKU AND JKUAT have not yet honored the payments for student's practicum, Dr. Wamukhoma to do follow-up with the HOD</li> </ul>	Dr. wamukhoma
Min3:1/5/19	<p><b>Course approval</b></p> <ul style="list-style-type: none"> <li>➤ P/no. 2005000908 Dr. Jebet Bolt: Had requested for course approval to undertake Masters in public health, an international course in development (MPH/ICHD) at the KIT Royal Tropical institute, Amsterdam, Netherlands for 1 year. Decision: Approved</li> <li>➤ p/no: 1998010683 Sophie Muthoni Ngugi: had requested for course approval to undertake a PHD in Public Health as a distance course at JKUAT for 2 years Decision: Approved</li> <li>➤ P/no: 1997093507 Ruth M. Makau: had requested for a course approval to undertake a master's degree in mental health nursing, full time at KU for 2 years. Decision: Approved</li> <li>➤ P/no: Gabriel Kauru Peter had requested for a course approval to undertake masters in counselling psychology as part time at Daystar. Decision: Approved</li> </ul> <p><b>Research Authorization</b></p> <ul style="list-style-type: none"> <li>➤ Levine Odhiambo, Edna Chirchir, Mohammed Hussein, Maureen Jepkosgei, Josiah Kimutai, and lemugard Moi a group of students from KMTC Mathare had requested co conduct a group study on infant mortality rates among patients who visit MNTRH, MCH/FP Clinic</li> </ul>	<p>CMED</p> <p>CMED</p> <p>CMED</p> <p>CMED</p> <p>CMED</p>

	<p>requested to conduct research on prevalence, risk factors associated with and predictors of onset of major depressive disorder among patients in MNTRH <b>Decision:</b> Approved</p>	CMED
	<p>➤ <b>Paul Mwove</b>, student from UON had requested for approval to conduct a study on biopsychosocial determinants of relapse among patients diagnosed with substance abuse disorders at MNTRH. <b>Decision:</b> Approved</p>	CMED
Min4:15/19 AOB	<p>➤ <b>Requirement for foreigners to do research in Kenya/ MNTRH.</b> Foreign student who wish to conduct research in the institutions must have</p> <ul style="list-style-type: none"> <li>• an introduction letter from their university or from their country</li> <li>• status of their migration to Kenya (passport)</li> <li>• approval from their university/or IREC in their country</li> <li>• approval from KEMRI, NACOSTI, KU or JKUAT</li> <li>• sign for a Code of conduct, approval from MOH and Ministry of foreign affairs</li> <li>• Training and research chair person.</li> </ul> <p>➤ The Hospital should organize for a symposium whereby feedback for all the research done within a year can be presented.</p> <p>➤ <b>Quality of attachments at MNTRH.</b> It has been noted that several students do not take attachment seriously, the HOD should strengthen their supervisory role, not to sign out any student who does not complete the total number of hours as stipulated in their letters and all students who fail to show up for</p>	

	<p>letters and all students who fail to show up for attachment should be forwarded to the deputy medical superintendent for action.</p> <ul style="list-style-type: none"> <li>➤ Dr. Waweru and Ruth Makau to prepare a list of research done since 2017 to avoid repetition of same topics by students</li> <li>➤ Dr. Wamukhoma to communicate to KEMU, MKU, and JKUAT that no more taking of their students unless they clear practicum fee.</li> </ul>	
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DR. WAMUKHOMA VICTORIA

Chairperson *Victoria* ..... sign *V. Wamukhoma* ..... date *28/5/2019*

Secretary *Ruth Makau* ..... sign *Ruth Makau* ..... date *28/5/2019*



**APPENDIX VII: BUDGET**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>
<b>STATIONERY</b>			
Lap top	1	44,000	44,000
Printing papers	4 Reams	500	2,000
Printer	1	10,000	10,000
Pencils	2	20	40
Rubber	1	20	20
Ball pens	3	20	60
<b>PERSONNEL</b>			
Typing and data entry	3 days	2,000	6,000
Research assistant	5 days	500	2,500
Statistical fee		15,000	15,000
<b>PRODUCTION COST</b>			
Binding & printing			4,000
Ethical review fee	1	500	500
Subtotal			69,620
Contingency (10% of the total cost.)			6,962
<b>TOTAL</b>			<b>91,082</b>



**APPENDIX VIII: TIME FRAME**

<b>ACTIVITY</b>	<b>DEC 2018 – MAR 2019</b>	<b>APRIL 2019</b>	<b>MAY TO JUNE 2019</b>	<b>JULY 2019</b>	<b>AUG TO SEP 2019</b>
PROPOSAL WRITE UP					
APPROVAL OF PROPOSAL					
DATA COLLECTION					
DATA ANALYSIS					
FINAL WRITE UP, PRINTING & DISSEMINATION OF FINDINGS					

## APPENDIX IX: SIMILARITY INDEX

### BIOPSYCHOSOCIAL DETERMINANTS OF RELAPSE AMONG PATIENTS DIAGNOSED WITH SUBSTANCE RELATED DISORDERS AT MATHARI NATIONAL TEACHING AND REFERRAL HOSPITAL, KENYA

#### ORIGINALITY REPORT

<b>13%</b>	<b>8%</b>	<b>1%</b>	<b>11%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

#### PRIMARY SOURCES

<b>1</b>	<b>Submitted to Mount Kenya University</b> Student Paper	<b>2%</b>
<b>2</b>	<b>Submitted to Kisii University</b> Student Paper	<b>1%</b>
<b>3</b>	<b>Submitted to Kenyatta University</b> Student Paper	<b>1%</b>
<b>4</b>	<b>Submitted to International Health Sciences University</b> Student Paper	<b>1%</b>
<b>5</b>	<b>Submitted to Adventist University of Africa</b> Student Paper	<b>&lt;1%</b>
<b>6</b>	<b>Submitted to Oklahoma State University</b> Student Paper	<b>&lt;1%</b>
<b>7</b>	<b>Submitted to Yeungnam University</b> Student Paper	<b>&lt;1%</b>

es.scribd.com