

**FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL
AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME
(ASATREP) IN KIAMBU COUNTY, KENYA.**

By

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2020.

DECLARATION

I, Dr. Virginia N. Wainaina declare that this dissertation is my own original work and has not been presented for a degree at any other University.

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DEDICATION

This project is dedicated to my entire family for their encouragement and moral support throughout this process. Your contribution has been invaluable and timeless. I love you all and may God's blessings be showered upon you.

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LIST OF ABBREVIATIONS

ASATREP	Alcohol and Substance Abuse Treatment and Rehabilitation Programme
KII	Key Informant Interviews
KNH	Kenyatta National Hospital
NACADA	National Authority for the Campaign against Drug Abuse
PACS	Penn Alcohol Craving Scale
PSDI	Positive Symptom Distress Index
PSQI	Pittsburgh Sleep Quality Index
SPSS	Statistical Package for Social Sciences
TRQ	Time to Relapse Questionnaire
UON	University of Nairobi

DEFINITION OF TERMS

Alcohol dependence- refers to the situation in which an individual cannot do without alcohol either physically or psychologically.

Alcohol dependence remission- having no symptom of alcohol dependence. This study considers remission as being symptom free for 6 months or longer.

Alcohol withdrawal syndrome- refers to symptoms such as hand tremors, slurred speech that occurs when a person stops taking alcohol.

Craving- a powerful desire for something.

Relapse – refers to drinking on five or more days per week or drinking five or more drinks per drinking occasion or blood alcohol concentration of more than 100mg/dl after a period of abstinence. This study considers drinking after a period of 6 months abstinence as relapse.

Second generation alcohol – a street term used in Kenya to refer to locally made cheap alcohols which are not fermented or distilled in registered alcoholic beverage companies.

ABSTRACT

Background: Alcohol use disorder poses adverse consequences to the users, their families and the larger society. In Kiambu County, it has been a major concern which led to establishment of Alcohol and Substance Abuse Treatment and Rehabilitation Programme to reduce its impact. Despite this, clients who go to these programmes often relapse, hence the need to investigate underlying factors influencing relapse.

Objective: The aim of the study was to establish factors influencing alcohol relapse among patients treated at ASATREP in Kiambu County.

Methodology: This was a case-control study design conducted in Alcohol and Substance Abuse Treatment and Rehabilitation Programme (ASATREP), Kiambu County, among alcohol-relapsed and non-relapsed patients after initiation of alcohol treatment. Cases included 134 patients who relapsed while controls were 134 patients who did not relapse within 6 months after treatment at the time of the study. Questionnaires were used to collect data while analysis was done using percentages, mean, chi square, odds ratio and regression analysis.

Findings: The study found out that patients who were not married were more likely to relapse than the married ones ($p=0.002$). In addition, peer pressure was a significant reason for drinking alcohol in those who relapsed [OR 3.1 (95% CI 1.5-6.6), $p=0.002$]. On the other hand, patients' age, gender, employment status and religion were not significantly different in the two study groups. Patients who relapsed to alcohol use had a significantly higher Penn alcohol craving score (PACS) with a mean of 25.3 compared to those who did not relapse (mean 8.8), $p<0.001$.

Conclusion: Alcohol relapse patients have a very high craving score for alcohol. Relapse is not associated with age, gender or education level of the alcohol addicts. On the other hand, marital status, having trouble sleeping and use of other drugs besides alcohol were independent predictors of alcohol relapse.

Recommendations: There is need to address peer pressure and abuse of other drugs other than alcohol during treatment and rehabilitation because the study showed that there is a strong association between use of other drugs and alcohol relapse.

CHAPTER ONE: INTRODUCTION

1.1 Background information

Alcohol consumption is a major public health issue globally and is responsible for 5.9% of all deaths. According to World Health Organisation, 5.1% of the global burden of disease and injury is attributable to alcohol due to increased risk of health problems such as liver cirrhosis, some cancers, cardiovascular diseases, mental and behavioural disorders including alcohol dependence, increased risk of attempted and completed suicide. Alcohol consumption also has negative effects on the drinkers' families and the social context such as promoting violent behaviours, social isolation, job loss and accidents at work and on the road (Fiabane *et al.*, 2017). Alcohol use has also led to so many deaths in Kenya. In the year 2010 alone, the cases of large number of people dying out of a single episode of drinking poisonous illicit liquor occurred in Shauri Moyo in Nairobi and Laikipia. Other most conspicuous cases include the use of *kumikumi* in November, year 2000 which resulted in 140 deaths and loss of sight among some users in poor Nairobi neighbourhoods of Mukuru kwa Njenga and Mukuru Kaiyaba (Kariuki & Oteyo, 2013). Irrespective of the type of intervention used, at least 60% of those treated for alcohol use disorder will relapse to a period of hazardous alcohol consumption usually within 6 months of treatment (Durazzo and Meyerhoff, 2017). A Kenyan study reported the proportion of alcohol relapse at 43.1% (Kuria, 2013). This is associated with extended periods of relapse and clinically significant impairments of psychosocial functioning, for example, unemployment, relationship discord and legal entanglements. However, sustained abstinence during the first 6 to 12 months

following treatment is related to significant neurobiological and neurocognitive recovery and adaptive psychosocial functioning (Durazzo and Meyerhoff, 2017).

Recovery from alcoholism is a life-long process. This is attributed to the changes that it produces in the brain of the client. The brains have been reprogrammed such that pleasure has become associated primarily with alcohol (Brownell, Marlatt & Lichtenstein, 1986). Therefore, contrary to many beliefs, once a person goes through alcohol detoxification and rehabilitation, the fight does not end there but is a life-long battle.

Alcohol relapse treatment provides an individual with the education they need to recognize the triggers that could lead to relapse while education on prevention gives the individual the tools and the techniques they need to combat the cravings and help avoid peer pressure (Brink, 2001).

In Kenya, alcohol use is escalating and has pervaded the whole society strata. However, high at risk are the youths and those in the early adulthood who form more than a half of the population. Over the years, the Government of Kenya, has been concerned about drug abuse and has instituted various legislations and policies to curb drug abuse. It created the National Campaign against Drug Abuse (NACADA) in 2001 to coordinate the prevention, reduction and control of drug and substance abuse through public education, empowerment, and enforcement liaison for a healthy and productive country. There has been an exponential growth in the number of rehabilitation centres in Kenya. Despite this progress, there has been evidence in the past studies that approximately 90 percent of alcohol addicts are likely to experience at least one relapse over the 4-year period following treatment (Kariuki & Oteyo, 2013).

On 6th July 2015, the County of Kiambu held a consultative strategic meeting on responding to the expected acute alcohol withdrawal syndrome after the Kenyan Government passed a directive to revoke all second generation alcoholic business licences. As a result of the

consultative meeting, Alcohol and Substance Abuse Treatment and Rehabilitation Programme (ASATREP) came into being. ASATREP programme is an emergency plan by the Kiambu County Health Services to mitigate against acute alcohol withdrawal syndrome and short to medium term health and psychological effects among persons dependent on alcohol.

1.2 Problem Statement

Alcoholism and subsequent relapse are problems of great concern in many countries in the world and Kenya in particular because of their adverse consequences to the alcohol addicts, their families and the larger society. In 2010, NACADA estimated that up to 34% of males and 3% of female dwellers of Central Province were current users of alcohol. A study by Kariuki & Oteyo done in 2013 indicated that up to about 10% of excessive users of alcohol develop dependence. From a conservative figure of 35%, the County of Kiambu would be home to approximately 600,000 current alcohol users. Using a conservative estimate of 5% dependence among current alcohol users, Kiambu County could have approximately 30,000 persons dependent on alcohol. Acute Alcohol Withdrawal Syndrome is known to occur in up to 5% of persons dependent on alcohol following sudden cessation of alcohol but can reach up to 85% among persons admitted for alcohol detoxification. With about half of all persons in Central province reported to be users of second hand generation alcohol, between 750 and 1500 individuals may have presented with acute alcohol withdrawal symptoms after cessation of consumption of alcohol during enforcement against second hand generation alcohol. In light of the above facts the study sought to find out the factors influencing alcohol relapse among alcohol addicts in ASATREP in Kiambu County.

1.3 Justification and Rationale

NACADA coordinates a two pronged campaign; supply suppression and demand reduction, whereby supply suppression involves enforcing policies, legislations and other means of controlling production, trafficking and sale of alcohol and other drugs. Demand reduction involves providing preventive education, public awareness, life skills, treatment, rehabilitation and psycho-social support to the general public with the aim of creating greater awareness. These efforts are not only limited to non-state agencies, but cuts across all public institutions which are also victims of alcohol and drug abuse.

The study was informed by the Government of Kenya directive to revoke all second generation alcoholic beverages licenses following a Presidential directive on 2nd July 2015. This led to development of acute alcohol withdrawal symptoms in many people in Kiambu County who were alcohol dependent. Hospitals were overwhelmed with the large number of people seeking treatment. As a result the County began Alcohol and Substance Abuse Treatment and Rehabilitation Programme (ASATREP) which was aimed at giving comprehensive physical, psychological and economic support to alcohol and substance abusers in the County. The programme had established 17 treatment and rehabilitation centres in the county which had centralised health record systems and management. The study conducted a follow-up on patients served in ASATREP centres in order to find out the factors influencing alcohol relapse among them. The purpose of conducting the study was to inform policy makers on factors influencing alcohol relapse among alcohol addicts in Kiambu County so as to improve on tackling alcohol addiction which had become a menace in the region.

CHAPTER TWO: LITERATURE REVIEW

2.1 Characteristics of Alcohol Dependent Patients

The development of alcohol dependence is complex and dynamic and involves many neurobiological and environmental factors. An individual's motivation to drink may be a balance between positive effects such as euphoria and reduced anxiety, and negative consequences such as withdrawal symptoms. These memories as well as learned associations between them and external stimuli influence both the initiation and regulation of intake. The nature and extent to which these factors are able to influence decisions about drinking vary among individuals and also whether the drinker is at the initial experience with alcohol, early problem drinking or later excessive drinking associated with dependence. Alcohol dependence is diagnosed by meeting at least four of the following criteria: drinking more alcohol than intended, unsuccessful efforts to reduce alcohol drinking, giving up other activities in favor of drinking alcohol, spending a great deal of time obtaining and drinking alcohol, continuing to drink alcohol in spite of adverse physical and social effects, and the development of alcohol tolerance (Becker, 2017).

Alcohol relapse can be defined as any consumption of alcohol after discharge from treatment (Schneekloth et al., 2012). It has been demonstrated in clinical studies that alcohol-dependent people are more sensitive to relapse-provoking cues and stimuli than nondependent people (Becker, 2017). Alcohol relapse can occur due to several biological and psychosocial factors such as alcohol craving, coping strategies, stressful life events and perceived social support (Schneekloth et al., 2012). Vulnerability to relapse is associated with intense craving (Becker, 2017).

Studies have identified factors associated with remission from alcohol dependence. These include older age at assessment, being married, good social support, younger age at onset of alcohol dependence, drinking less amounts and less severity of drinking (Kuria, 2013). An Italian study showed that 70.8% patients were male and had a mean age of 46.47 years, 49.3% were employed and 65.5% had a low education level. Employment rates were significantly higher for males than females (Fiabane et al., 2017). A Kenyan study reported that 60.5% of the participants began drinking before they attained the recommended drinking age of 18 years. Most of the participants had a low monthly income. Slightly more than half of them drank alcohol daily (Kuria, 2013).

Some screening questionnaires have been developed to measure alcohol cravings and relapse such as Penn Alcohol Craving Scale (PACS) and Time to Relapse Questionnaire (TRQ). Time to Relapse Questionnaire (TRQ) is designed to assess the time from initial thought of drug use to actual use. It is a useful self-report measure that may provide information among addicted patients who relapse without forewarning compared to those with a period of delay hence a measure that assesses the time factors involved in relapse (Adinoff et al., 2010). Therefore, Time to Relapse Questionnaire is a tool best applied to relapsed patients only. On the other hand, Penn Alcohol Craving Scale is an instrument that is well-validated, multi-item scale used to capture craving characteristics and is the strongest predictor of subsequent drinking in comparison with the Alcohol Urge Questionnaire and the Obsessive Craving Scale (Schneekloth et al., 2012). Since this study compares those who have relapsed and those who have not, PACS is a more useful measure because it is applicable in relapsed and not relapsed patients.

2.2 Prevalence of Alcohol Abuse and Relapse in Kenya

The NACADA 2009 countrywide survey indicated a current usage of alcohol among persons aged 15-65 years to be 14.2% with male consumption being 22.9% and female consumption being 5.9%. Rural areas had a consumption of 13.0% while urban areas had 17.7%. The lowest use by provinces was in North Eastern (0%) and Western provinces (6.8%) while the other six provinces ranged from 13% to 19% with Central province at 17.7% (Kariuki & Oteyo, 2013).

A Kenyan study reported the proportion of alcohol relapse as 43.1% (Kuria, 2013). Among treated individuals, short-term remission is 20%-60% while long-term relapse is 20%-80%. In treated individuals, greater social pressure, more severe alcoholic related problems, lack of self-efficacy, poor coping skills, co-morbid mood disorder and anxiety disorder have been associated with short-term relapse (Kuria, 2013).

2.3 Alcohol Treatment

The NACADA 2009 survey showed that 5% of alcohol users had ever sought medical treatment for alcohol related ailments. Alcohol addiction treatment can either be done in an inpatient or outpatient setting (Fiabane *et al.*, 2017). Alcoholism treatment interventions are both psychosocial and pharmacologic (Schneekloth *et al.*, 2012). It includes medication, for example, disulfiram, cognitive behavioural therapy (CBT), motivational enhancement therapy, 12-step facilitation therapy, contingency management, relapse prevention therapy and family therapy (Fiabane *et al.*, 2017). A parenteral high potency drug combination of Vitamin B and C is one of the standard drugs used for alcohol detoxification in hospital settings in Kenya (Kuria, 2013). During treatment Trazodone is used to treat sleep disturbances in alcohol recovery. However, a USA study did not find an association between Trazodone medication use at discharge and relapse at 6 months (Kolla *et al.*, 2011).

The transtheoretical model of intentional behaviour change outlines a series of stages a person goes through when changing their drinking behaviour. These include pre-contemplation, contemplation, preparation, action and maintenance. In the first stage, pre-contemplation, the individual is neither ready to change nor to start healthy behaviour in the near future. The contemplation stage begins with the individual recognizing the problem with alcohol but taking no action. In the action stage, the individual is making steps to change behaviour while in the maintenance stage, the individual works to avoid a relapse (Fiabane *et al.*, 2017).

2.4 Risks for alcohol relapse

Relapse can be defined as any consumption of alcohol after discharge. It can occur due to several biological and psychosocial factors such as alcohol craving, coping strategies, self-efficacy, stressful life events and perceived social support (Schneekloth *et al.*, 2012; Mattoo *et al.*, 2009).

Alcohol craving is associated with perpetuation of drinking behaviors despite negative consequences and relapse after periods of abstinence or addiction treatment (Schneekloth *et al.*, 2012). There is a complex relationship between alcohol drinking and stress. Alcohol has anxiety reducing properties and hence can relieve stress. However, at the same time it act as a stressor and activates the body's stress response systems. This plays a role in the relationship between stress and alcohol dependence and withdrawal. Stressful life events influence alcohol drinking and relapse (Becker, 2012). Findings from human laboratory and brain-imaging studies are consistent with clinical observations that indicate that chronic alcohol-related dysfunction in emotional and stress responses plays a role in motivation to consume alcohol in people with alcohol use disorders. Differences in response to stress between alcohol-dependent versus non-dependent social drinkers show alterations in stress pathways that may in part explain the

significant contribution of stress-related mechanisms on craving and relapse susceptibility. Chronic alcohol use increases stress related symptoms and is associated with increased anxiety and negative emotions, changes in sleep and appetite, aggressive behaviors, changes in attention, concentration and memory, and craving for alcohol. Severity of alcohol use has been shown to affect the magnitude of cue-related physiological arousal, compulsive alcohol seeking and stress-related changes including alcohol related morbidity. Therefore, the risk of alcohol-related problems, addiction and chronic diseases increases with greater weekly or daily alcohol and drug use. Alcoholic patients entering outpatient substance abuse treatment report high levels of stress and an inability to manage distress adaptively and this increases their risk of succumbing to high levels of drug craving and relapsing to drug use (Sinha, 2012).

Resilience is where individuals attempt to adapt regardless of serious risks. This phenomena has been noticed to differ among those with alcohol use disease, chemical dependency or in recovery from these conditions. Innate resilience factors are those strongly related to the individual's inherent nature while acquired resilience factors are taught (Yamashita & Yoshioka, 2016).

Insomnia is difficulty in falling asleep, frequent and/or prolonged awakenings and/or consistently unrefreshing sleep that occurs despite adequate sleep opportunity. Sleep disturbances are common in the early stages of recovery from alcohol dependence and may persist for several months despite continued abstinence. This increases the risk for relapse to alcohol (Arnedt *et al.*, 2007).

Craving is defined as an intense and urgent subjective experience that prompts individuals to achieve a target, or practice an activity to reach its desired effects. Actively desiring alcohol during abuse treatment may be a better predictor of relapse than other variables at admission such as alcohol severity, psychological functioning or treatment (Fiabane *et al.*, 2017). One of

the screening questionnaires developed to assess the severity of alcohol cravings is the Penn Alcohol Craving Scale (PACS) (Schneekloth *et al.*, 2012).

2.5 Factors influencing Alcohol Relapse

Higher PACS scores in alcoholics receiving treatment have been associated with more severe alcohol dependence and subsequent relapse. A USA study showed that relapse was associated with a higher level of craving at admission and at discharge (Schneekloth *et al.*, 2012). This is in line with evidence that craving is associated with different aspects of addiction such as withdrawal and relapse and also with clinical characteristics such as depression and anxiety (Vukovic *et al.*, 2008). Another study reported that higher PACS scores at admission were associated with higher probability of relapse (Hitschfeld *et al.*, 2015).

An inpatient rehabilitation program for alcohol dependence in Italy focused on detoxification, enhancing motivation to change and coping strategies for the management of emotional distress and temptation to drink. Previous studies showed an overall reduction in anxiety and depression and an improvement in psychological functioning among alcoholics during the first three to four weeks of detoxification. However, the Italian study showed that significant predictors of post-treatment temptation to drink were polysubstance dependence, readiness to change and self-efficacy. It was during the late post-detoxification period where there was a risk for depression and relapses. More than half of the patients (55.1%) had a history of more than ten years of alcohol dependence (Fiabane *et al.*, 2017). In a USA study, relapse had higher frequencies of psychiatric conditions (Durazzo & Meyerhoff, 2017).

Another USA study found that postpartum risky drinkers were more likely than other women to have had a partner engaged in risky drinking (Odds ratio=2.6), to have smoked following pregnancy (OR = 1.9), to have been unemployed (OR = 3.0) and to have consumed alcohol after

recognition of pregnancy (OR = 4.8) (Jagodzinski & Fleming, 2007). In terms of education in another USA study, relapsers had fewer years of education ($p=0.015$) (Durazzo & Meyerhoff, 2017).

Cigarette smoking among alcoholics is related to the intensity of alcohol craving during residential treatment and corresponding sobriety length. A retrospective cohort study reported that alcohol craving intensity was higher in smoking females compared to males and non-smoking females, however this did not translate into higher rates of post-treatment relapse (Hitschfeld et al., 2015). A USA study reported that among relapsers, smokers and individuals with comorbid medical condition relapsed earlier after treatment. A greater frequency of smokers relapsed within 6 months of alcohol use disorder treatment. This result reinforces that relapse is a function of multiple biological, psychiatric, psychological and psychosocial factors (Durazzo and Meyerhoff, 2017). A study by Kuria in 2013 showed levels of co-morbidity were high with 63.8% having depression and 42.6% having generalized anxiety disorder at enrolment. However, this fell to 10.7% and 6.1% at the end of 6 months.

Published studies have reported that patients with disturbed sleep and difficulty falling asleep were more likely to relapse. Although sleep improves with continued abstinence, permanent alterations to the sleep centres of the brain from chronic alcohol exposure may produce persistent abnormalities that may require independent treatment (Arnedt *et al.*, 2007).

A Kenyan key informant interview study reported that the local leaders were more aware on alcoholic prevention efforts than other members of the community probably because they were actively involved in the enforcement of laws. However, unsatisfactory support of prevention efforts by law enforcers was a hindrance. The KII reported that community members were aware of the consequences of alcohol usage and the advantages of prevention efforts (Kariuki & Oteyo,

2013). In the light of above information, the study sought to answer the question “what factors are associated with alcohol relapse among patients in Alcohol and Substance Abuse Treatment and Rehabilitation Program, Kiambu County?”

2.6 Comparison between Relapsed and Non-Relapsed Patients

A USA study estimated the odds of relapse among asymptomatic risk drinkers and low-risk drinkers relative to abstainers. The recurrence of alcohol use disorder symptoms relative to abstainers were 14.6 times as great for asymptomatic risk drinkers and 5.8 times as great for low-risk drinkers. The proportions of individuals who had experienced the recurrence of dependence were 10.2%, 4.0% and 2.9% respectively while the odds ratio relative to abstainers were 7.0 for asymptomatic risk drinkers and 3.0 for low-risk drinkers. The study thus concluded that abstinence represents the most stable form of remission for most recovering alcoholics (Dawson *et al.*, 2007).

An Indian study that compared male patients who had relapsed and those who had not, reported that those who relapsed were significantly more likely to have a positive family history of substance use and have a higher number of previous relapses. They were also likely to have been exposed to a higher total number of high risk situations, to be using maladaptive coping strategies and to have experienced a higher number of undesirable life events. However, those who abstained tended to use significantly more number of coping strategies especially adaptive ones and score significantly higher on all measures of self-efficacy (Mattoo *et al.*, 2009).

In another Indian cross-sectional study of two groups of alcohol dependent patients, family history of substance dependence and past history of ≥ 2 relapses were associated with relapse to alcohol dependence. Other variables like younger age at onset of dependence and shorter time to develop dependence were significantly associated with relapse. Coping behaviour had the

highest association with relapse followed by relapse precipitants. The mean age of onset of dependence was 3.93 years lesser in relapse patients compared to abstinence patients ($P=0.038$). Among patients with a family history of dependence, 59.1% had relapse compared to 40.9% who had no family history of dependence (Sureshkumar *et al.*, 2017).

In a Turkish study, 61.8% alcohol-dependent male patients relapsed. However, the socio-demographic variables did not differ between relapsed and non-relapsed groups. The mean scores were higher in the relapsed group than non-relapsed group. The study reported that both impulsivity and novelty seeking seemed to be related with craving and relapse (Evren *et al.*, 2012).

In a Japanese study, patients with innate/acquired resilience had a mutually reinforcing relationship compared with the low resilience group. The high resilience group had significantly reduced risks for relapses and had deeper self-disclosure. These results suggest that as a way of supporting patients with alcohol use disorder is by assisting them in building personal relationships with others and in deepening self-disclosure (Yamashita & Yoshioka, 2016).

A study reported that alcoholic patients who relapsed by 5 months post-treatment were more likely to report difficulty falling asleep and abnormal sleep than patients who remained abstinent.

In a follow-up of this study, 60% of alcoholic patients reported insomnia in the 6 months prior to quitting alcohol compared to 30% who did not (Arnedt *et al.*, 2007).

A Kenyan study did not report major socio-demographic differences between those abstinent and those who relapsed. However, alcohol drinking pattern at intake, craving for alcohol at intake and the age of onset of alcohol drinking were significant. In addition, those with high mean score of alcohol related problems were more likely to relapse (Kuria, 2013).

2.7 Theoretical Framework

There are several theories that have been developed to explain why people use and abuse alcohol and other drugs, and especially why they continue or relapse despite being aware of the negative consequences. However, classical and operant conditioning, behavioural and social learning theories will guide this study. These theories help to explain that, treating psychological problems and interventions used are based on behavioural principles and psychodynamic principles reflecting different assumptions about nature of substance abuse and the recovery process. Behavioural treatment postulates that substance abuse is the result of maladaptive learning and the recovery involves unlearning patterns of behaviour that contribute to persistent substance abuse. In contrast, psychodynamic treatments are based on the assumption that substance abuse is a symptom of childhood conflicts to be resolved by molding or changing the behaviour that has been labelled socially deviant.

The social learning theory shows how people learn or unlearn certain behaviours. Negative reinforcement, which can extinguish maladaptive behaviour, places limits on self-destruction behaviour. Motivation is primarily concerned with how behaviour is activated and maintained. A great deal of human behaviour, however, is initiated and sustained over a long period in the absence of compelling immediate external stimulation. Cognitively based sources of motivation operate through the intervening influences of goal setting and self-regulated reinforcement. When individuals commit themselves to explicit goals, perceived negative discrepancies between what they do and what they seek to achieve create dissatisfaction that serve as motivational inducements for change (Bandura, 1977).

The psychoanalytic theory was developed by Sigmund Freud for the purpose of treating neuroses-using hypnosis. The theory suggests that behaviour problems develop over a long

period of time and is rooted in the subconscious. The person may be having good intentions to modify his behaviours, but the unconscious forces mitigate against the progress (Herbert, 1975). This theory applied to this study shows that the treatment should allow the patient to become consciously aware of his or her motives, thereby strengthening the ego, modifying the structure of personality and changing the disturbing behaviour patterns.

Classical and operant conditioning is based on the fact that alcohol abuse like any other behaviour is learned and maintained by various antecedent (preceding) and consequent (outcome) events in the society. Alcohol, a depressant drug, temporarily reduces tension and makes the person feel more relaxed. In learning terms, the more often drinking is reinforced by tension reduction and relaxation, the more likely a person is to respond by drinking in the future. Since drinking of alcohol promptly alleviates these adverse physical reactions, drinking behaviour is automatically and continuously reinforced (Rivers, 1994).

2.8 Conceptual Framework

The following conceptual framework was used in the study. The above theoretical framework based on the behavioural and social learning guided in developing a conceptual framework of the study that linked selected factors and how they explained factors that contributed to relapse among alcohol addicts in ASTREP, Kiambu County. The conceptual framework showed the relationship between independent, dependent and background variables.

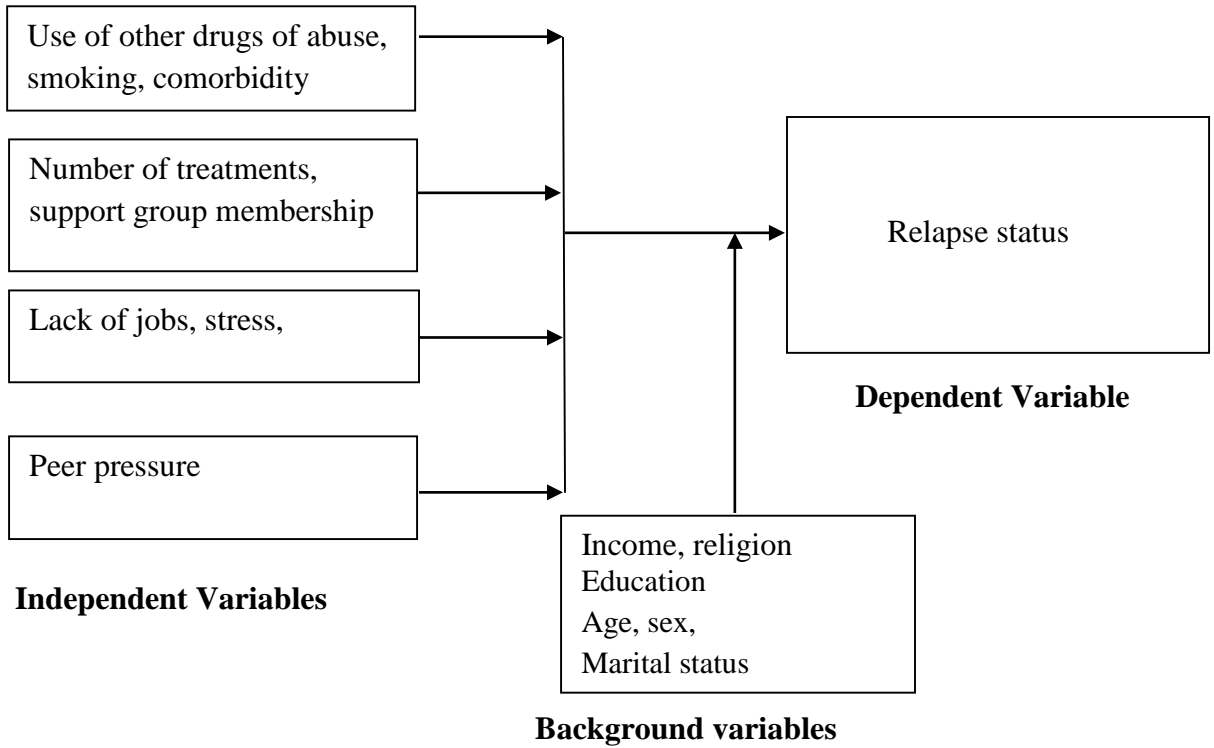


Figure 1: Conceptual Framework

2.9 Research Question

1. Which factors are associated with alcohol relapse among patients who underwent rehabilitation in ASATREP, Kiambu County?

2.10 Research Objectives

2.10.1 Broad Objective

The general objective of the study was to establish factors that influenced alcohol relapse among patients in alcohol and substance abuse treatment and rehabilitation programme (ASATREP), Kiambu County.

2.10.2 Specific Objectives

Specific objectives were to determine:

1. Socio-demographic characteristics of relapsed and non-relapsed patients who had undergone rehabilitation in ASATREP, Kiambu County.
2. Psychosocial characteristics among relapsed and non-relapsed patients who had undergone rehabilitation in ASATREP, Kiambu County.
3. The relationship between socio-demographic and psychosocial characteristics established among relapsed and non-relapsed patients in order to identify significant factors influencing alcohol relapse among patients who had undergone rehabilitation in ASATREP, Kiambu County.
4. Alcohol craving score (Penn Alcohol Craving Scale) for relapsed and non-relapsed patients who had undergone rehabilitation in ASATREP, Kiambu County.

CHAPTER THREE:

STUDY METHODOLOGY

3.1 Study Area

The study was conducted in ASATREP which is in Kiambu County within the former Central Province of Kenya (appendix VI). The county has an area of area of 2,543.42 square kilometres. Geographical coordinates are 1° 10' 0" South, 36° 50' 0" East. The county's capital is Kiambu town and its largest town Thika. The county is adjacent to the northern border of Nairobi County and had a population of 1,623,282 (2009). The county has warm climate with temperatures ranging between 12 degrees and 18.7 degrees Celsius. The rainfall aggregate is 1000mm each year which makes it conducive for farming. June and July rank as the coldest months while January to March and September to October rank as the hottest months of the year. The major economic activity is cash crop farming of coffee and tea while animal husbandry is also widely practised. Common subsistence farming include growing maize, potatoes and beans. The county has better infrastructure as compared to other parts of the country. There are over 300 health facilities, 1133 primary schools, 313 secondary schools, over 10 technical colleges and higher learning institutions. The population is generally healthy as indicated by a low infant mortality rate although there has been tremendous rise of alcohol consumption in recent years which has led to alcohol dependence among many youths and therefore attracted the Kenyan government and county's attention, leading to the established of Alcohol and Substance Abuse Treatment and Rehabilitation Programme (ASATREP) which has 17 centres located in different health facilities in Kiambu County with central management at Thika County Hospital. The programme mainly deals with treatment and rehabilitation of alcohol dependent patients.

3.2 Research Design

The study design was a case-control study which compared alcohol-relapsed patients versus those who had not relapsed after initiation of treatment. It also had a qualitative arm which involved key informant interviews (KII) among ASATREP counsellors. The study design was chosen because the study was retrospectively conducted among two groups who were abusing alcohol but underwent rehabilitation and despite similar exposures, there were two opposite known outcomes; relapse and non-relapse. Therefore the study design enabled the establishment of factors that were associated with alcohol relapse.

3.3 Study Population

The study was conducted among alcohol addicts rehabilitated in ASATREP, Kiambu County. The study group comprised of patients who were rehabilitated in ASATREP and relapsed while the comparison group included patients who were rehabilitated and remained alcohol free for at least 6 months at the time of the study. The Key Informants Interviews were done among health care providers (counsellors) in ASATREP.

3.4 Sample Size and Sampling Procedure

3.4.1 Sample Size Calculation

The sample size was estimated using Kelsey's formula which is appropriate for sampling unmatched case-control study. Estimation was done as follows:

$$n = \frac{2(Z_{1-\alpha/2} + Z_{1-\beta})^2 P_{av}(1 - P_{av})}{(P_0 - P_1)^2}$$

Where

n – Minimum sample size required

$Z_{1-\alpha/2}$ – Standard normal deviate at 95% confidence interval = 1.96

$Z_{1-\beta}$ – Standard normal at 80% power = 0.84

P_0 – The proportion with characteristic of interest in the comparison group. The study used family history of alcohol dependence as it has been shown in a previous study to be significantly higher in the patients with alcohol relapse. The proportion in the comparison group was 58.1% (Sureshkumar et al, 2017).

P_1 - The proportion with family history of alcohol dependence in the study group = 74.3% (Sureshkumar et al, 2017).

$$P_{av} = \frac{P_0 + P_1}{2} = 66.2\%$$

When substituted,

The minimum sample size, n was 134 in each group hence a total of 268 patients were recruited into the study. In order to cater for non-response, an additional 10% (28 patients) were included. Therefore, 296 patients were sampled.

3.4.2 Recruitment of Study Participants

Cases: Cases included patients who were at least eighteen years who were on follow up at ASATREP and abusing alcohol for previous six months at the time of the study. They had to give written consent and be in sober state of mind at the time of the interview. A list of these patients was obtained from ASATREP computerised system which indicates weekly progress of patients. Simple random sampling technique using Microsoft Excel (function *rand between*) was used to select 134 study participants and an extra 14 participants (10% of study sample) to cater for non-response. A total of 148 cases were selected and contacted using cell phone contacts obtained from ASATREP health records. They were requested to meet at counselling centres during their next visit for questionnaire administration. Some opted to meet at the nearest health centre to their place of residence.

Controls: Similar process used in selection of cases was applied to derive 148 study participants as controls. They had to be at least eighteen years and on follow up at ASATREP. They had to

have abstained from alcohol consumption for at least six months before the study and give written consent.

Cases and controls made a sample of 296 study participants whose names were coded to maintain confidentiality.

Purposive sampling was used to select 10 ASATREP counsellors who were interviewed as key informants with at least six months experience working at ASATREP.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

1. Patients who were on follow-up at ASATREP from 2015 and had been drinking alcohol in previous 6 months were used as cases while controls were patients who had abstained from drinking alcohol in same duration.
2. Patients who were 18 years of age and above.
3. Those who consented to participate
4. Key Informants were counsellors with at least six months experience in ASATREP.

3.5.2 Exclusion Criteria

1. Patients who were unable to respond to the interviews due to their mental state.
2. Those who declined to participate in the study.
3. Key Informants who were in managerial positions.

3.6 Variables

Dependent variable:

Relapse status of respondents

Independent Variables:

Age at commencing drinking, age at regular drinking, main reason for drinking alcohol, people regularly drink with before seeking treatment, close family members who drink, alcohol support

group, trouble sleeping, stress, use of other drugs, smoking, comorbidity, number of previous treatments and craving.

Background Variables:

Age, Sex, Education, Marital status, Source of income and Religion.

3.7 Data Collection

Data was collected in the facility where patients attended follow up visits. Contact information was obtained from hospital records and patients requested to come to the health facility where informed consent was obtained followed by administration of questionnaires to collect data on their socio-demographic characteristics and their social history. In addition, Penn Alcohol Craving Scale (PACS) that is a five-item instrument for assessing craving with numerical ratings ranging from 0 to 6 was applied. Reliability and validity studies have been done to ensure PACS internal consistency, content, criterion and construct validity. The higher the score, the more the craving (Flannery *et al.*, 1999). PACS was chosen because it is applicable in both relapsed and non-relapsed patients as opposed to tools such as Time to Relapse Questionnaire is best applied to relapsed patients only. The questionnaires were administered by four trained research assistants who were clinical officers and nurses in Kiambu County Hospital. Research assistants were trained on importance of the study, structure of questionnaires and were given samples to fill in for practice purposes, how to handle respondents when administering questionnaires and how to conduct interviews while taking notes. The Key Informant interviews were conducted using a guide (Appendix v). Notes were taken during the interviews. Both the questionnaires and interviews took 20 to 25 minutes.

3.8 Data Analysis

Data from the cross-sectional questionnaires was coded, entered, and analysed using Statistical Package for Social Sciences (SPSS) version 22. Percentages, means and standard deviations were used to describe and summarize findings. The analysed data was presented in tables and figures. Odds ratio was used to establish strength of association between relapse, non-relapse and other factors. In addition, Chi-square test of significance was used to establish p-values of categorical variables and therefore find out the association between relapse, non-relapse and other factors. A p-value of < 0.05 was considered significant. Finally, logistic regression analysis was used in order to control the effect of confounders.

Qualitative data from the KII was coded into themes in MS Word. During data analysis, this information was manually sorted into key categories to facilitate thematic analysis. Recurrent and significant issues were highlighted.

3.9 Minimization of Errors and Biases

Simple random sampling was done in order to get a representative sample of cases and controls from the study population. The questionnaires were pre-tested through a pilot study done at Karuri Health Centre in Kiambu County which was excluded during the study to ensure validity. The questionnaires were structured in order to enhance reliability. Filled in questionnaires were checked for completeness at the end of the interviews. Confidentiality was emphasized to study respondents during data collection in order to get accurate responses. The research assistants were trained on administering questionnaires and conducting interviews. Research assistants were educated on the research topic and filled in mock questionnaires among themselves.

3.10 Ethical Consideration

The study adhered to the University of Nairobi research ethics policy by observing the University of Nairobi code of conduct for researchers throughout the study period. Approval to undertake the study was obtained from the School of Public Health and the KNH - UON Ethics and Research Committee. In addition, further permission was sought from Kiambu County Health Committee and ASATREP before seeking consent from respondents to participate in the study. Furthermore, all sources used in the study were acknowledged so as to avoid plagiarism. Finally, permission was sought from the Ministry of Health and senior administrators of the targeted hospitals before commencing the study.

Study participants were fully informed about the study; its objectives and procedures so as to give informed consent before the study commenced. Details of the ethical procedures were documented in a form with explicit information on consent, confidentiality, right to withdraw or not participate, and benefits and risks of the study (Appendix II).

3.11 Study Limitations

The research was carried out among patients on follow-up at ASATREP so it may be difficult to generalise the findings to the local population, particularly to alcohol addicts who are not on treatment or follow-up.

The study may be prone to recall bias, since data was collected using questionnaires, with no review of existing medical records or direct observation.

CHAPTER FOUR: STUDY RESULTS

4.1 Introduction

This chapter is organised into two parts. Part one comprises results from cases and controls which was a comparison of 134 alcohol-relapsed individuals with 131 who did not relapse. Both groups had been on treatment for similar duration; 19.7 months for the relapsed versus 21 months for non-relapsed ($p=0.171$). Also, the number of treatments were similar (mean of 1.9 in each group). Those who relapsed started drinking alcohol 12.8 weeks after alcohol dependence treatment. The relationship between variables in each category was analysed using odds ratio and p-values calculated using chi-square test. Multiple logistic regression was used to analyse the relationship between variables and tendency to relapse. Part two comprises of results from Key Informants.

PART ONE:

4.2.1 Socio-demographic characteristics

Level of education, marital status, employment status, religion and gender are variables analysed in this section. As shown in table 1, the mean age of the relapsed patients was 34.2 years while that of non-relapsed group was 35.5 years ($p=0.093$), therefore no significant difference. Gender distribution was not significantly different between the two groups ($p=0.499$) with males forming majority of patients at 78.4%.

Education level was similar between the two groups as indicated by p-values of more than 0.05 although the study noted that there were double the number of illiterate patients in the relapsed group (9.7%) compared to the non-relapsed patients (4.6%).

Married patients who relapsed comprised 25.6% while 62% were single. On the other hand, 43.8% of non-relapsed patients were married while 47% were not. Marital status had a significant difference among the two groups as indicated by a p-value of 0.010.

Employed patients who relapsed were 3.7% while 96.3% were unemployed. All patients (100%) who did not relapse were unemployed. Therefore, there was no significant difference in employment status in the two study groups as indicated by of p-value of 0.060.

All relapsed patients were Christian, 98.5% of non-relapsed patients were Christian while 1.5% were Muslim. Religion was not a significant variable among the two groups as indicated by a p-value of 0.243.

Table 1: Socio-demographic characteristics

Variable	Relapsed n (%)	Not relapsed n (%)	OR (95% CI)	Chi square/ t statistic	P value
Mean age (SD)	34.2 (6.8)	35.5 (5.6)	-	t=-1.69, 263df	0.093
Gender					
Male	105 (78.4)	107 (81.7)	0.8 (0.4-1.5)	X ² =0.46, 1df	0.499
Female	29 (21.6)	24 (18.3)	1.0		
Level of education					
None	13 (9.7)	6 (4.6)	0.6 (0.1-3.9)	X ² =7.50, 3df	0.057
Primary	72 (53.7)	67 (51.1)	0.3 (0.1-1.5)		
Secondary	42 (31.3)	56 (42.7)	0.2 (0-1.1)		
Tertiary	7 (5.2)	2 (1.5)	1.0		
Marital status					
Married	34 (25.6)	57 (43.8)	1.0	X ² =11.29, 3df	0.010
Single	62 (46.6)	47 (36.2)	2.2 (1.3-3.9)		
Divorced/separated	30 (22.6)	24 (18.5)	2.1 (1.1-4.2)		
Widowed	7 (5.3)	2 (1.5)	5.9 (1.2-29.9)		
Employment					
Yes	5 (3.7)	0	-	X ² =4.99, 1df	0.060
No	129 (96.3)	131 (100.0)			
Religion					
Christian	133 (100.0)	128 (98.5)	-	X ² =2.06, 1df	0.243
Muslim	0	2 (1.5)			

4.2.2 Psychosocial factors associated with relapse

Psychosocial factors discussed in this section in relation to alcohol relapse include stress, frustration, difficulty sleeping, peer pressure, having close relatives and friends who drink among others. As shown in table 2 and figure 4, the patients who relapsed to alcohol use started drinking at a significantly older age (20.7 years) compared to their counterparts (19.2 years), $p=0.011$. However, age at regular drinking was not significantly different between the two groups ($p=0.357$).

The main reason for drinking alcohol among relapsed patients was frustration (50.7%) followed by peer pressure (22.4%), then unemployment at 17.2% and lastly enjoyment at 9.7%. Similarly, majority of non-relapsed patients, sited frustration as the most likely reason that would make them relapse (49.2%) followed by unemployment at 24.6%, then enjoyment at 17.7% and lastly peer pressure (8.5%). Peer pressure was noted to have significant difference among the two groups [OR 3.1 (95% CI 1.5-6.6), $p=0.002$].

Most relapsed patients drunk in the company of friends before treatment (81.3%) which is similar to non-relapsed patients at 83.2%. About 19% of relapsed patients drunk with family members before treatment as compared to 16.8% in the non-relapsed group. Drinking company kept by both groups while drinking before beginning treatment was not significantly different as shown by a p-value of 0.619.

Relapsed patients whose close relatives drunk alcohol comprised 93.3% while the same applied to 94.6% of the non-relapsed group. There was no significant difference in the two groups as shown by a p-value of 0.650.

The percentage of patients who belonged to support groups among the relapsed was 82.7 while 17.3% did not. On the other hand, 86.9% of non-relapsed patients belonged to a support group. There was no significant difference in the two groups as indicated by a p-value of 0.341.

Patients who had trouble sleeping in the relapsed group were 86.5% compared to 48.1% of non-relapsed patients. This was significant difference in the two groups ($p < 0.001$).

Patients in both groups reported that they found life stressful; 91.7% in relapsed group and 85.4% in non-relapsed group. Therefore, there was no significant difference in the two groups ($p = 0.106$).

The percentage of relapsed patients who suffered from other medical conditions was 21.6 while 78.4% did not. On the other hand, 7.7% of non-relapsed patients had other medical conditions while 92.3% did not. Generally, most patients did not have other medical conditions but there was a significant difference among those who did in the two groups as shown by a p value of 0.001.

Relapsed patients who abused other drugs as well were 69.4% compared to 11.5% of non-relapsed patients which indicated a significant difference ($p < 0.001$). Most non-relapsed patients (88.5%) did not abuse other drugs other than alcohol.

Smoking was a common habit among relapsed patients (64.9%) as compared to 13% of non-relapsed patients. This was a significant difference as indicated by a p-value of < 0.001 . Most non-relapsed patients (87%) did not smoke while 35.1% of relapsed patients did not smoke as well.

Table 2: Psychosocial factors associated with relapse

	Relapsed n (%)	Not relapsed n (%)	OR 95% CI	Chi square/ t statistic	P value
Mean age started drinking (SD)	20.7 (5.7)	19.2 (3.5)	-	t=-2.57, 263df	0.011
Mean age started regular drinking (SD)	25.2 (5.0)	24.7 (4.0)	-	t=-0.923, 263df	0.357
Main reason for drinking alcohol					
Unemployment	23 (17.2)	32 (24.6)	0.6 (0.4-1.2)	X ² =13.12, 3df	0.004
Peer pressure	30 (22.4)	11 (8.5)	3.1 (1.5-6.6)		
Frustration	68 (50.7)	64 (49.2)	1.1 (0.7-1.7)		
Enjoyment	13 (9.7)	23 (17.7)	0.5 (0.2-1.0)		
Drinking company before treatment					
Friends	109 (81.3)	109 (83.2)	0.9 (0.5-1.7)	X ² =0.16, 1df	0.691
Family	25 (18.7)	22 (16.8)	1.0		
Have close family members who drink					
Yes	125 (93.3)	123 (94.6)	0.8 (0.3-2.2)	X ² =0.21, 1df	0.650
No	9 (6.7)	7 (5.4)	1.0		
Belong to an alcohol support group					
Yes	110 (82.7)	113 (86.9)	0.7 (0.4-1.4)	X ² =0.91, 1df	0.341
No	23 (17.3)	17 (13.1)	1.0		
Have trouble sleeping					
Yes	115 (86.5)	63 (48.1)	6.9(3.8-12.6)	X ² =44.25, 1df	<0.001
No	18 (13.5)	68 (51.9)	1.0		

Finds life stressful					
Yes	122 (91.7)	111 (85.4)	1.9 (0.9-4.2)	X ² =2.62, 1df	0.106
No	11 (8.3)	19 (14.6)	1.0		
Suffer from illness/medical condition					
Yes	29 (21.6)	10 (7.7)	3.3 (1.5-7.1)	X ² =10.20, 1df	0.001
No	105 (78.4)	120 (92.3)	1.0		
Using other drugs other than alcohol					
Yes	93 (69.4)	15 (11.5)	17.5(9.2-33.5)	X ² =92.14, 1df	<0.001
No	41 (30.6)	116 (88.5)	1.0		
Smoking					
Yes	87 (64.9)	17 (13.0)	12.4(6.7-23.1)	X ² =74.97, 1df	<0.001
No	47 (35.1)	114 (87.0)	1.0		

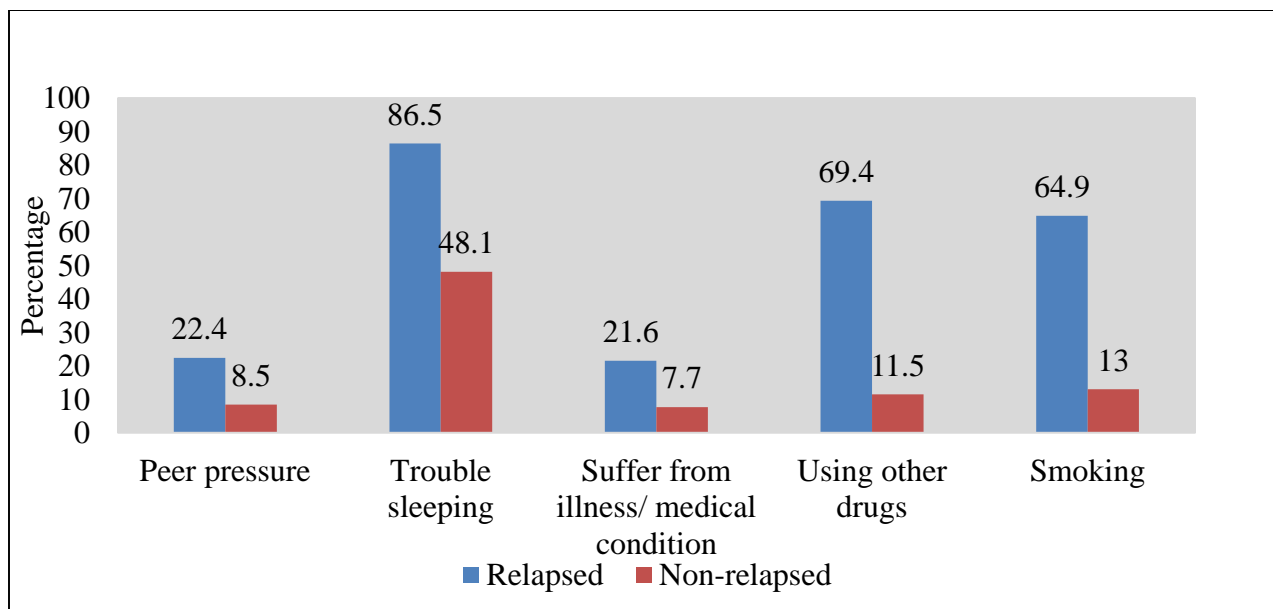


Figure 2: Socio-demographic and psychosocial factors associated with alcohol relapse

4.2.3 Predictors of alcohol relapse

Multiple regression analysis was done in order to establish the association between variables and alcohol relapse. Variables which were identified as having significant difference with a p value of less than 0.05 in tables 1 and 2 were used to conduct multiple regression analysis while controlling for confounding effect in order to establish factors that had direct influence on alcohol relapse. As shown in table 3, factors that influenced alcohol relapse were marital status: divorced/separated (p=0.005) and widowed (p=0.002), peer pressure (p=0.023), having trouble sleeping (p<0.001) and using other drugs other than alcohol (p=0.012). On the other hand, factors that did not influence alcohol relapse or were affected by confounding factors were suffering from other medical conditions (p=0.290) and smoking (p=0.749).

Table 3: Predictors of alcohol relapse

Variable	Adjusted OR (95% CI)	P value
Marital status		
Married	1.0	
Single	0.5 (0.2-1.1)	0.097
Divorced/separated	4.0 (1.5-10.7)	0.005
Widowed	18.3 (2.9-117.2)	0.002
Peer pressure		
Yes	3.7 (1.2-11.3)	0.023
No	1.0	
Have trouble sleeping		
Yes	4.6 (2.2-9.9)	<0.001
No	1.0	
Suffer from illness/medical condition		
Yes	1.7 (0.6-4.9)	0.290
No	1.0	
Using other drugs other than alcohol		
Yes	16.5 (1.9-148.0)	0.012
No	1.0	
Smoking		
Yes	1.4 (0.2-13.7)	0.749
No	1.0	

4.2.4 Alcohol craving

Data collected by scoring Penn alcohol craving scale among relapsed and non-relapsed patients indicated that patients who relapsed to alcohol use had a significantly higher score with a mean of 25.3 compared to those who did not relapse (mean 8.8), $p < 0.001$. The error bar (figure 3) below illustrates the differences in Penn Alcohol Craving Score (PACS) among the two groups.

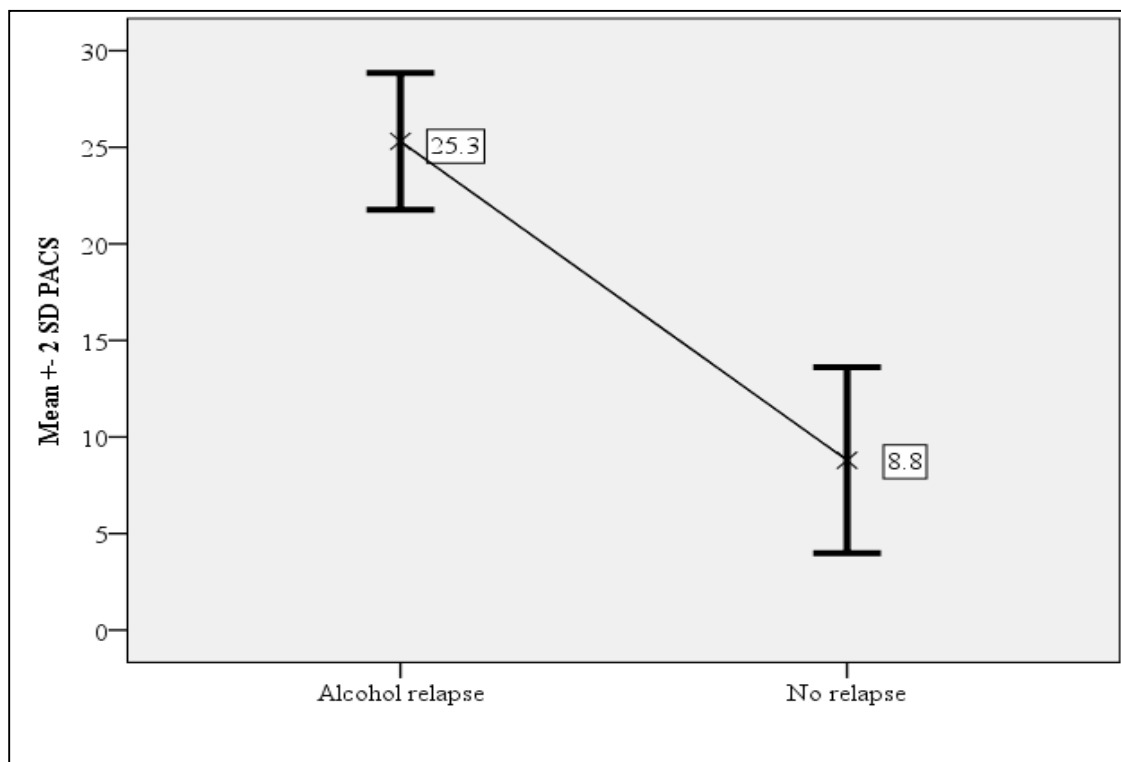


Figure 3: PACS between the relapsed patients compared to the non-relapsed patients

PART TWO:

4.3 Results of Key informants on alcohol relapse

The study interviewed ten counsellors with at least six months experience working at ASATREP. The average age of key informants was 34.9 years with females comprising 60% and males 40%. The average duration of working at ASATREP was 1.25 years (15 months) while average duration of dealing with alcohol addicts was 3.6 years. Most key informants felt that alcohol abuse in Kiambu County was rampant especially among male youths and the unemployed. They said that effort had been directed at the community level to mitigate alcohol abuse such as establishment of many treatment and rehabilitation centres, outreach counselling service, community education forums at schools and public gatherings, alcohol support groups and that the community was aware of these services and the services were effective. A minority of key informants felt that the community was either unaware of the services or they were but did not take them seriously. Sometimes community interventions were unsuccessful due to low level of client's education, patients' intoxication during counselling and long distance from client's residence to service points. Table 4 shows factors that lead to alcohol relapse and interventions as sited by key informants.

Table 4: Factors influencing alcohol relapse and their mitigation

Factors causing alcohol relapse	Suggested interventions to curb relapse
Poverty Joblessness Family conflict Peer pressure Availability of cheap alcohol Depression Hopelessness Rejection	Job creation Counselling Community awareness Peer education Establishment of strict alcohol laws

CHAPTER FIVE:

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

These findings showed that despite alcohol addicts undergoing alcohol treatment for similar duration, some addicts relapsed back to alcohol use while others remained alcohol free. Relapse happened several weeks after treatment which indicated the effectiveness of treatment. However, several other factors determine whether the addicts revert to alcohol use or not. Both groups of addicts were demographically similar showing that age, gender and level of education had no influence on alcohol relapse. This study found no difference in age between the addicts who relapsed compared to those who remained alcohol-free. Findings from a previous study showed increased risk of relapse associated with older age (Kolla et al, 2015). Age at onset of alcohol dependence has been shown to be associated with alcohol relapse after treatment. A study reported relapsed patients were significantly younger at onset of dependence as compared to their counterparts (Sureshkumar et al, 2017). Our study did not measure age at onset of dependence but found the patients who relapsed to have started drinking at a significantly older age than the group that did not relapse. The relapsed group might have developed dependence earlier than the non-relapsed group.

There were a high number of males who underwent treatment and they formed a majority in the groups that relapsed and those who did not relapse. A study reported similar findings where there was no significant association of relapse with gender but with a trend showing men having reduced risk of relapse (Kolla et al, 2015) Education was similar across the two groups . Marital status was significantly associated with relapse; those who relapsed were more likely not to be

married than those who remained alcohol-free. This reveals the importance of family being psychosocial support system that encourages the recovering addicts to stay off alcohol during the treatment period. On the contrary, a family with similar alcohol dependence problems may increase the risk of relapse after treatment. A study showed that women in postpartum stage who had partners who were risky drinkers had increased risk of engaging in risky drinking (Jagodzinski et al, 2007).

Use of other drugs was associated with a high risk of relapsing to alcohol use. A study among women in first six weeks after delivery showed increased risk of engaging in risky drinking if they were smokers (Jagodzinski et al, 2007). Another study showed that smokers relapsed to drinking 6 months after treatment compared to non-smokers (Durazzo et al, 2017). This study showed association between smoking and relapse however it was not significant when controlled for other factors. Those who used other drugs besides alcohol were at a very high risk of relapsing to alcohol use after treatment. This indicates the necessity of addressing other addictions during alcohol treatment period in order successful treat addicts from alcohol dependence and reduce relapse.

Sleep disturbance was found to be associated with 4 fold increased risk of relapse among recovering alcohol addicts. This was contrary to a study that showed no association between alcohol relapse and PSDI (Positive Symptom Distress Index) sub-scales measuring sleep onset latency, daytime dysfunction, and night-time sleep disturbance at both admission and discharge (Kolla et al, 2015). Our study did not use PSQI (Pittsburgh Sleep Quality Index) tool to assess sleep disturbance.

Alcohol craving was significantly higher in the relapsed group than the non-relapsed group. Similar findings have been reported in previous studies showing a higher discharge PACS associated with relapse (Schneekloth *et al.*, 2012). A higher craving score with availability of alcohol cues and stimuli increases the chance of a recovering addict to revert to alcohol use. Peers can be a source of alcohol-related cues which are among the key factors associated with high relapse rates in addictive disorders (Vukovic *et al.*, 2008). In this study, peer pressure was associated 3 fold increased risk of alcohol relapse among recovering addicts. However, a further analysis showed that other factors such as marital status had a negative effect on peer pressure hence reinforcing the importance of an addict having a family support system after the treatment.

Key informants sited peer pressure and having relatives who drink to be among factors influencing alcohol relapse which concurs with a study done by Mungai and Midigo (2019) in rural Muranga County. This findings are in line with psycho-social theory which states that certain behaviours are influenced positively or negatively especially by people close to us therefore alcohol addicts are encouraged to continue with this behaviour by their peers and family members. Key informants reported that effort had been directed at the community level to mitigate alcohol abuse such as establishment of many treatment and rehabilitation centers, outreach counselling service, community education, alcohol support groups and that the community was aware of these services and the services were effective which differs by findings from a study done by Muturi in 2015 which stated that community intervention services were ineffective in rural Kenya. Some key informants felt that the community was either unaware of interventional services or did not take them seriously. Sometimes community interventions were unsuccessful due to low level of client's education, patients' intoxication during counselling and long distance from client's residence to service points.

5.2 Conclusions

The study comes up with the following conclusions:

1. Peer pressure, being divorced/separated or widowed, having trouble sleeping and using other drugs other than alcohol were strongly associated with alcohol relapse.
2. Alcohol relapse was not associated with patients' age, gender, religion and education level. In addition, there was indirect influence on alcohol relapse by suffering from other medical conditions and smoking which were variables affected by confounders.
3. Alcohol relapse patients had a very high craving score for alcohol.

5.3 Recommendations

The study recommends that:

1. There is need to address peer pressure, sleep disorders and abuse of other drugs other than alcohol during treatment and rehabilitation in order to reduce relapse because study results showed that there was a strong association to alcohol relapse.
2. Penn Alcohol Craving Score should be introduced in alcohol dependence treatment centres as a screening tool to identify patients with high risk of relapse because the study showed a higher score among relapsed patients as compared to non-relapsed patients. This will enable establishment of targeted interventions for such patients.

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APPENDICES

APPENDIX I: INTRODUCTORY LETTER

Dear Sir/Madam,

RE: REQUEST TO COLLECT DATA FOR A MASTERS PROJECT

Dear Sir or Madam,

I am a student at University undertaking a Masters of Public Health at University of Nairobi. I am doing a research on survey on **FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME (ASATREP) IN KIAMBU COUNTY, KENYA.** You have been purposively selected to participate in this study because of having attended to alcohol addict patients in this facility. The success of the study depends on your truthfulness and honest responses to all the questions asked. The researcher intends to assure you that the responses you give will be treated with utmost confidentiality and will not be shared to any third party without your written consent. Your assistance will be highly appreciated.

Thank you.

Yours faithfully,

DR.VIRGINIA N. WAINAINA

REG No. H57/75378/2014.

Signature _____

APPENDIX II: CONSENTING/ASSENTING INFORMATION

TITLE OF THE STUDY: FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME (ASATREP) IN KIAMBU COUNTY.

Introduction to the Study

I am Dr. Virginia Wainaina, a student at Nairobi University undertaking a Masters of Public Health. I am carrying out a research on survey of the factors influencing alcohol relapse among patients in ASTREP rehabilitation centres in Kiambu County, Kenya. The study will be used by policy makers in order to successfully combat alcohol abuse. You have been purposively selected to participate in this study because of having been a patient or treated patients in this facility. Your participation in this study is purely voluntary. You can decline to participate with no penalty. You have the right to drop out anytime, and you can skip questions or decline to give information and you will face no negative consequences. However, the success of the study depends on your truthfulness and honest responses to all the questions asked. The responses you give will be treated with utmost confidentiality.

Procedures

Having met eligibility criteria as a patient, you will be required to sign a consent form after which, you will be presented with a questionnaire which will take 20-25 minutes. On the other hand, if you are a key informant, it will take 20-25 minutes to be interviewed.

Benefits/Risks

There may not be any direct benefit to you as a participant. You will not receive any payment for taking part in the study. However, the information gathered from the study will be used to improve services offered at alcohol and drug abuse rehabilitation centres.

There are no physical risks in your participation in this study. You will not be required to pay anything to take part in the study.

Voluntary Participation and Withdrawal

Your participation in this study is purely voluntary. You can decline to participate with no penalty. You have the right to drop out anytime, and you can skip questions or decline to give information and you will face no negative consequences.

Confidentiality

You will not be required to write your name or give any personal identification in the questionnaire. Instead, numerals will be used. You will be given a consent form to sign. All the questionnaires will be kept safely under lock and key then destroyed once the study is over. There shall be no way to identify individual participants.

APPENDIX III (A): CONSENTING FORM (ENGLISH)

STUDY NUMBER..... DATE.....

I..... hereby agree to participate in the study being carried out by Dr. Virginia Wainaina on the factors influencing alcohol relapse among alcoholics in ASATREP, Kiambu County. I understand there is no physical risk in the study. I will not pay anything to take part in the study. I also realise that there is no direct benefit to me or monetary compensation, but information gathered from the study will be used to improve health services offered to alcohol and other drug abusers. I also understand that the study is purely voluntary and that I may withdraw from the study at any time and my withdrawal will not attract any penalties.

Participant’s Name..... Telephone no.

Participant’s signature...../ Left thumb print.....

Witness’s Name _____

Witness’s signature _____ Date _____

Signature of principal investigator (or authorized representative) _____

Contact information

If you have questions now or in the future regarding your rights as a participant in research or this study, please contact the Investigator, Dr. Virginia Wainaina on 0723881743 or The Chairperson, Kenyatta National Hospital- University of Nairobi Ethics and Research Committee through P O Box 20723-00200 Nairobi. Tel 020-272527 extension 44102

APPENDIX III (B): WALAKA WA KUKUBALI KUSHIRIKI KATIKA UTAFITI (SWAHILI)

Nambari ya somo..... Tarehe.....

Mimi..... nimekubali kuchangia katika somo hili linalo endelezwa na daktari Virginia Wainaina kuhusu idadi na sababu amabazo huchangia wenye matatizo yanayotokana na kubugia pombe kupita kiasi kujipata na tabia hiyo hata baada ya kupata matibabu katika hospitali za kurekebisha shida hiyo zijulikanazo kama ASATREP zilizo katika County ya Kiambu. Nimeelewa ya kwamba hakuna madhara yeyote itakayo nipata kutokana na mchango wangu kwa somo hili. Nimeelewa pia ya kwamba jukumu hili ni la kujitolea kwa hivyo sitarajii malipo yeyote wala kulipa chochote ili kuhusika. Juu ya hayo nimeelewa umuhimu wa somo hili katika kuendeleza matibabu ya kushugulikia watu wengine ambao wanaandamwa na shida ya kubugia pombe kupita kiasi. Mwisho kabisa nimeelewa ya kwamba kuhusika katika somo hili ni kwa kujitolea tu na niko na uhuru wa kujiondoa kama mhusika wa somo hili na kufanya hivyo hakutaadhili kazi na cheo changu katika huduma hii ya afya kwa sasa au kwa siku zijazo katika kuhudumia wagonjwa yanayotokana na ulevi wa pombe kupindukia.

Jina la Mkurugenzi/ Mshauri..... Nambari ya simu.....

Sahihi..... / Ishara ya Kindole cha kushoto.....

Jina la shahidi _____

Sahihi ya shahidi _____ Tarehe _____

Sahihi ya Mtafiti (*ama mwakirishi wake*)_____

Mawasiliano

Kama unamaswali yoyote sasa ama siku zijazo kuhusu utafiti huu, uliza Mtafiti daktari Virginia Wainaina, nambali ya simu 0723881743 au Mwenyekiti, Kenyatta Hospitali Kuu ya Kenyatta-Kamati ya utafiti wa maadili ya Chuo Kikuu cha Nairobi Box 20723-00200 Nairobi. Nambali ya simu 020-272527 extension 44102

APPENDIX IV: QUESTIONNAIRE

TITLE OF THE STUDY: FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME (ASATREP) IN KIAMBU COUNTY.

Participant Number:..... Interviewer Number:.....

Relapsed participant:

- 1) Yes
- 2) No

Date of interview (dd/mm/yyyy):.....

A. SOCIODEMOGRAPHIC DATA

- 1. What is your age (Years)? _____
- 2. Place of residence (location): _____
- 3. Sex:
 - 1) Male
 - 2) Female
- 4. What is the highest level of formal education you have attained?
 - 1) None
 - 2) Primary
 - 3) Secondary
 - 4) Tertiary (College/University)
- 5. What is your marital status?
 - 1) Single
 - 2) Married
 - 3) Divorced/Separated
 - 4) Widowed
- 6. Are you employed? Yes..... No.....
If no, what is your main source of income.....
- 7. What religion do you practice?
 - 1) Christian
 - 2) Muslim
 - 3) Other (specify): _____

B. ALCOHOL INTAKE:

- 8. At what age did you begin drinking (age in years)? _____
- 9. At what age did you start to drink on a regular basis (age in years)? _____
- 10. What is your main reason for drinking alcohol? _____
- 11. Who did you regularly drink with before seeking treatment? _____
- 12. Do you have close family members who drink? _____

- 1) Yes No.....
13. Do you belong to any support group (Alcohol support group)? Yes..... No.....
14. Do you have trouble sleeping?
- 1) Yes
- 2) No
15. Do you find life to be stressful?
- 1) Yes
- 2) No
16. Do you suffer from any illness/medical condition?
- 1) Yes
- 2) No
- If yes, specify the illness.....

17. Do you use other drugs other than alcohol?
- 1) Yes
- 2) No
18. Do you smoke?
- 1) Yes
- 2) No

C. ALCOHOL TREATMENT:

19. How long ago did you start your treatment for alcohol dependence? _____
20. How many treatments have you had? _____
21. a) Have you taken alcohol in the last 6 months? (If yes, go to question 21b)
- 1) Yes
- 2) No
- b) How long after treatment did you drink alcohol? _____

D. PENN ALCOHOL CRAVING SCALE (PACS)

22. Circle the number that best describes the patient's craving during the past week:
- 1) During the past week *how often* have you thought about drinking or about how good a drink would make you feel?
- 0** - never (0 times during the past week).
- 1** - Rarely (1 to 2 times during the past week).
- 2** - Occasionally (3 to 4 times during the past week).
- 3** - Sometimes (5 to 10 times during the past week or 1 to 2 times per day).
- 4** - Often (11 to 20 times during the past week or 2 to 3 times per day).
- 5** - Most of the time (20 to 40 times during the past week or 3 to 6 times per day).
- 6** - Nearly all the time (more than 40 times during the past week or more than 6 times per day).
- 2) At its most severe point, *how strong* was your craving during the past week?
- 0** - None at all.

- 1 - Slight, which is a very mild urge.
- 2 - Mild urge.
- 3 - Moderate urge.
- 4 - Strong urge, but easily controlled.
- 5 - Strong urge and difficult to control.
- 6 - Strong urge and would have drunk alcohol if it were available.

3) During the past week, *how much time* have you spent thinking about drinking or about how good a drink would make you feel?

- 0 - None at all.
- 1 - Less than 20 minutes.
- 2 - 21 to 45 minutes.
- 3 - 46 to 90 minutes.
- 4 - 90 minutes to 3 hours.
- 5 - Between 3 to 6 hours.
- 6 - More than 6 hours.

4) During the past week, *how difficult* would it have been to resist taking a drink if you had known a bottle were in your house?

- 0 - Not difficult at all.
- 1 - Very mildly difficult.
- 2 - Mildly difficult.
- 3 - Moderately difficult.
- 4 - Very difficult.
- 5 - Extremely difficult.
- 6 - Would not be able to resist.

5) Keeping in mind your responses to the previous questions, please rate your overall *average craving* for the past week.

- 0 - Never thought about drinking and never had the urge to drink.
- 1 - Rarely thought about drinking and rarely had the urge to drink.
- 2 - Occasionally thought about drinking and occasionally had the urge to drink.
- 3 - Sometimes thought about drinking and sometimes had the urge to drink.
- 4 - Often thought about drinking and often had the urge to drink.
- 5 - Thought about drinking most of the time and had the urge to drink most of the time.
- 6 - Thought about drinking nearly all the time and had the urge to drink nearly all of the time.

APPENDIX V: KEY INFORMANT INTERVIEW GUIDE

TITLE OF THE STUDY: FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME (ASATREP) IN KIAMBU COUNTY.

Participant Number.....

Date of Interview (dd/mm/yyyy).....

I would like to start by asking you a few questions about yourself:

1. What is your age (Years) and Sex.....
2. How long have you worked as a counsellor in ASATREP?

I would like to ask you a few more questions regarding alcohol abuse and treatment:

1. When did you begin to be involved with alcohol problems in your community?
2. How would you describe the level of alcohol use in Kiambu?
3. Who is most affected by alcohol use?
4. What interventions are used to try and solve alcohol abuse in ASATREP and at the community level?
5. How effective are these interventions?
6. How aware is the community about these interventions?
7. What barriers are there to treatment of those affected by alcohol use? How can they be overcome?
8. What are some of the common reasons for people to relapse? How can they be overcome?
9. Can you describe ways that you feel could be the most effective in overcoming the problem of alcohol abuse?
10. Are there any additional comments you would like to give on alcohol abuse in your community?

APPENDIX VI: MAP OF KIAMBU COUNTY (KIAMBU COUNTY, 2017)



APPENDIX VII: UNIVERSITY OF NAIROBI PLAGIARISM POLICY

Appendix I Declaration Form for Students

UNIVERSITY OF NAIROBI Declaration of Originality Form

This form must be completed and signed for all works submitted to the University for examination.

Name of Student _____
Registration Number _____
College _____
Faculty/School/Institute _____
Department _____
Course Name _____
Title of the work _____

DECLARATION

1. I understand what Plagiarism is and I am aware of the University's policy in this regard
2. I declare that this _____ (Thesis, project, essay, assignment, paper, report, etc) is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work, or my own work has been used, this has properly been acknowledged and referenced in accordance with the University of Nairobi's requirements.
3. I have not sought or used the services of any professional agencies to produce this work
4. I have not allowed, and shall not allow anyone to copy my work with the intention of passing it off as his/her own work
5. I understand that any false claim in respect of this work shall result in disciplinary action, in accordance with University Plagiarism Policy.

Signature _____

Date _____

APPENDIX VIII: PLAGIARISM REPORT

ORIGINALITY REPORT

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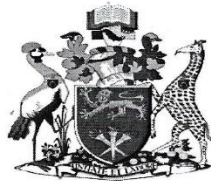
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APPENDIX IX: KNH-ERC APPROVAL LETTER



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

Ref: KNH-ERC/A/359

Virginia N.Wainaina
Reg. No.H57/75378/2014
School of Public Health
College of Health Sciences
University of Nairobi

Dear Virginia

RESEARCH PROPOSAL – FACTORS INFLUENCING ALCOHOL RELAPSE AMONG PATIENTS IN ALCOHOL AND SUBSTANCE ABUSE TREATMENT AND REHABILITATION PROGRAMME(ASATREP) IN KIAMBU COUNTY(P467/07/2018)

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 4th October 2018 – 3rd October 2019.

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.

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



KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: <http://www.erc.uonbi.ac.ke>
Facebook: <https://www.facebook.com/uonknh.erc>
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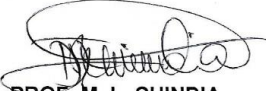


KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

4th October 2018

Protect to discover

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 Public Health, UoN
 Supervisors: Mr. Lambert Nyabola, Prof. Caleb J. Othieno

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