

**DETERMINANTS OF RISK OF RELAPSE AMONG PATIENTS TREATED
FOR ALCOHOL ADDICTION AT SELECTED REHABILITATION CENTRES
IN MERU COUNTY, KENYA**

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**A Thesis Submitted to the Graduate School in Partial Fulfillment of the
Requirements for Award of a Degree of Master of Science in Clinical Psychology
of Chuka University**

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DECLARATION AND APPROVAL

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Declaration

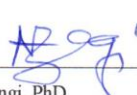
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DEDICATION

I dedicate this thesis to my lovely Pauli-Ann Carriere for her unconditional love and also to the congregation of sisters of Mercy for their humanitarian charism.

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ABSTRACT

Alcohol addiction constitutes a severe public health concern globally and locally. Though there are many treatments available, the rate of relapse in alcohol addiction worldwide is often much higher than 50%. In Kenya, many adults have alcohol use disorder and the rate of relapse is similarly high ranging between 20 and 80%. This study aimed at examining the prevalence of risk of relapse, psychosocial factors related to the risk of relapse, and the environmental factors related to the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County. The study employed analytical cross-sectional design and mixed-methods of collection of data. Prior to the data collection, a pretest was carried out on 13 patients in comparable facility to test the validity of the semi questionnaire and key informants. A reliability coefficient of 0.804 was obtained. One hundred and thirty (130) primary respondents participated in the study and six (6) key informants. Census method was used to include participants in the study. The research instruments used included a semi-structured questionnaire and standardized tool called Advanced Warning of Relapse Questionnaire (AWARE), which were used to collect quantitative data. Key informant schedule was used to collect qualitative data. Quantitative data was analysed using a computer software, IBM SPSS Statistics 29, while qualitative data was analysed by use of thematic network analysis. Descriptive statistic, chi-square test, and logistic regression analysis was carried out. Results revealed that from the 130 patients, 98(75.4%) patients were at high risk of relapse while 32(24.6%) patients were at low risk of relapse. Majority of them 79(60.8%) were aged between 20 to 34 years. Males, 113 (86.9%) were majority. The urge to drink alcohol ($p=0.004$), thinking about relapsing ($p=0.040$), experiencing feeling of low mood, hopelessness and feeling depressed ($p=0.012$) were identified as the psychosocial determinants while living with alcohol users ($p=0.015$) and ease access of alcohol ($p=0.032$) were the environmental factors influencing the risk of relapse among patients treated for alcohol addiction. The findings underscore the role played by psychosocial and environmental factors in the risk of relapse among patients treated for alcohol addiction. The insights from the study can be used by psychologists and counsellors to improve in their clinical approaches thus promoting long term recovery. There is a need of collaborative working between the clinicians, the society, recovering patients and policy makers in order to ensure long term recovery of those recovering from alcohol addiction. Intervention-based studies of the effectiveness of certain programs that limit environmental access to alcohol can be carried out to obtain evidence-based methods of dealing with relapse.

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LIST OF ACCRONYMS AND ABBREVIATIONS

AA	Alcoholic Anonymous
AOR	Adjusted Odds Ratio
AUD	Alcohol Use Disorder
APA	American Psychiatric Association
AWARE	Advanced Warnings of Relapse
ICP	Icyizere Psychotherapeutic Centre
KNBS	Kenya National Bureau of Statistic
NACADA	National Authority for the Campaign against Alcohol and Drug Abuse
NACOSTI	National Commission for Science Technology and Innovation
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIDA	National Institute on Drug Abuse
NSDUH	National Survey on Drug Use and Health
UNODC	United Nation Office on Drugs and Crime
SPSS	Statistical Software Package for Social Sciences
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Alcohol addiction, also termed as Alcohol use disorder or alcohol dependency, is a chronic brain disease which is characterized by uncontrollable consumption of alcohol (Kumar *et al.*, 2021). It leads to impaired ability to control alcohol use in people and adverse consequences in their social, occupational, and health functions, (American Psychiatric Association, 2022). Relapse occurs regularly in some patients during the recovery process and is defined as the practice of indulging in alcohol intake after a period of staying sober or following periods of controlled drinking (National Institute on Drug Abuse, 2020). The process of relapsing into drinking starts much earlier than when people take their first sip thus unfolding into three defined stages which consist of emotional, mental, and physical phases. At the emotional stage, patients experiencing emotional upsets frequently encounter elevated levels of stress, anxiety, and depression that drive them toward alcohol consumption (Kelly *et al.*, 2020). The mental stage comprises of having patients use cognitive distortions such as justification to find reasons to drink (Marlatt & Donovan, 2020). People experiencing the physical stage of cravings will show physiological signs because they encounter triggers related to their past drinking experiences such as specific locations or particular individuals (Witkiewitz & Marlatt, 2020).

Globally, studies show that patients who are dependent on alcohol and are recovering have high chances of relapse, particularly in the initial period within one year of having been treated. It is estimated that around 60 to 70% of people relapse during this time which highlights the chronicity of alcohol use disorder (AUD) and the multidimensionality of factors that affect relapse vulnerability (Klimas *et al.*, 2020). Psychological cravings, environmental triggers, co-occurring mental health issues, and social support systems are all factors that play a significant impact on the vulnerability of a person to relapse (Gates *et al.*, 2021). Also, insufficient post-treatment follow-up and support with community reintegration increases the likelihood of relapse and is another factor important in maintaining abstinence (Huang *et al.*, 2022).

Socio-cultural and economic factors increase the risk of relapse among Africans who have been treated for alcohol addiction. The presence of stigma related to AUD, scarcity of high-quality aftercare programs, and conventional mindsets tend to determine the chances of relapse, and maintaining abstinence becomes a challenge (Mokaya *et al.*, 2021). According to the existing research, African countries demonstrate relapse rates up to 70% during the first year after the treatment, with environmental and social pressures being the critical factors (Njoroge *et al.*, 2020). In spite of these insights, little detailed knowledge is available on the particular determinants that increase chances of relapse in the various African settings, such as in Kenya.

Studies show that more than 50% of patients in Kenya face a relapse within 12 months after their discharge from rehabilitation programs (Kipkorir *et al.*, 2021). Peer pressure, access to alcohol, the cultural acceptability of drinking, and a lack of post-treatment support services have been named among the primary contributing factors to a higher risk of relapse (Muthoni & Wanjiru, 2021).

Majority of current research work gives generalized information, and not enough attention is given to the local factors, which contribute to risk of relapse in a particular area such as Meru County. Data relating to the factors that impact on the risk of relapse among alcohol addiction patients are limited in Meru County. There are socio-cultural fabric, economic activities and community support systems which may influence relapse risk; each contextual factor is under-researched. These local determinants need to be understood so that specific interventions can be developed to help relapse and result in long-term community recovery.

1.2 Statement of the Problem

Alcohol dependence remains a significant health care problem both in the world and in Kenya, and most patients have a high likelihood of relapse following treatment. Globally, it is estimated that around 60 to 70% of people relapse during their first year after discharge following treatment. In Africa it is estimated up to 70 % while in Kenya it is estimated to be more than 50 % relapse rates. Relapse rates have been recorded in a number of studies; however, little is known about the factors that put patients in the rehabilitation facilities in Meru County at risk of relapse. It is important

that these factors associated with risk of relapse are identified so that specific prevention measures can be formulated to maintain long term recovery. According to available research in Kenya, the risk of relapse among recovering patients is above average, and it is estimated that more than half of all patients treated are at a higher risk within the first year after treatment. However, such studies have failed to provide much insight on exactly what determinants increase the risk of relapse at the local levels particularly in Meru County which has its own socio-cultural dynamic.

The knowledge of particular factors that put patients in Meru County at risk of relapse has a large gap. The majority of the current research is either on relapse itself or on overall prevalence, but not on factors that put an individual at particular risk. This restricts the options of healthcare providers to make focused early interventions to the people at highest risk. This study examined the primary factors that influence the risk of relapse among patients treated for alcohol addiction in Meru County. By putting the emphasis on risk factors, the study was bound to yield important information about which patients are the most susceptible and why, thus, allowing the design of specific relapse prevention strategies.

In addition, alcohol-related problems in the area are on the rise, thus Meru become the optimal location of targeted research to guide thereof effective intervention measures. Also, the strategic positioning of Meru and the existence of several rehabilitation facilities gave a convenient environment where thorough research could take place, which guided the local and national policies. The results of this study support the progress of mental health programs in line with the overall health and development objectives of Kenya particularly in the underserved areas where research is limited. The results also assist in guiding local policy and intervention programs to minimize chances of relapse, and maximize long-term recovery amongst individuals in the community.

1.3 Objectives of the Study

1.3.1 Broad Objective

To assess the determinants of risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya.

1.3.2 Specific Objectives

1. To determine the prevalence of the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya.
2. To identify the psychosocial factors associated with the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya.
3. To determine the environmental factors associated with the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya.

1.4 Research Questions

1. What is the prevalence of risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya?
2. What are the psychosocial factors associated with the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya?
3. What are the environmental factors associated with the risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres in Meru County, Kenya?

1.5 Significance of the Study

Studies on determinants of risk of relapse, particularly psychosocial, cultural, and environmental, are scarce. This study offered useful information about the particular domains that can affect the possibility of relapse in patients who are recovering alcohol addicts in Meru County. The knowledge of these determinants intended to guide healthcare professionals, and rehabilitation facilities create specific interventions that limit the occurrence of a relapse and promote long-term recovery. The findings aimed at bringing beneficial changes to the patients in recovery journey as well as their families because improvement in treatment methods or techniques yield long term recovery and reduce likelihood of relapse. Staff members at different treatment centers learn about the key variables behind patient relapse which enables them to optimize treatment plans and interventions. This study's findings created insights which could influence Kenyan national policies and frameworks related to drug addiction treatment. These insights aimed at improving as well as inform the

existing policies such as the Kenya National Strategy on Alcohol and Drug Abuse by the National Authority for the Campaign Against Alcohol and Drug (NACADA).

This study aligned closely with several Sustainable Development Goals (SDGs). Notably, it supported SDG 3: Good Health and Well-being by providing insights into factors that influence relapse, thereby informing strategies to improve health outcomes among individuals with alcohol dependence (United Nations, 2020). Additionally, addressing alcohol relapse contributes to SDG 8, Decent Work and Economic Growth, as substance abuse can impair productivity and increase healthcare costs, highlighting the importance of effective intervention programs (WHO, 2021). The research also aligned with Kenya's national health policies, including the Kenya Mental Health Policy (2015 to 2030), which emphasizes strengthening mental health services and integrating substance abuse treatment into healthcare systems (Kenya Ministry of Health, 2020). By identifying key determinants of relapse, the study aimed to inform the development of evidence-based policies and interventions that promote sustained recovery, enhance health service delivery, and reduce the social and economic burden of alcohol addiction.

The study added value to the UN Sustainable Development Goal 3 (Good Health and Well-Being) by focusing on substance abuse mortality reduction. The research revealed risk of relapse determinants which enable the creation of better prevention and treatment approaches to improve public health results thus reducing the mortality rates resulting from alcohol addiction. The findings have potential applications within the United Nations Office on Drugs and Crime (UNODC) guidelines because these guidelines highlight the essential nature of complete drug prevention and treatment programs. This study sought to advance understanding of risk of relapse in alcohol addiction in patients while influencing national and international drug recover policies to achieve broader health and societal outcomes in Kenya. Indeed, this study is useful to the nation and local policy makers providing evidence to inform the development of target prevention strategies, resource allocation and public health initiatives that combat relapse frequencies.

1.6 Scope of the Study

This study aimed at investigating the determinants of risk of relapse among patients treated for alcohol addiction at selected rehabilitation centres at Meru County in Kenya. The objectives of the study were to assess the prevalence of risk of relapse, identify the psychosocial factors associated with risk of relapse, and determine the environmental factors associated with risk of relapse. The selected facilities included St. Nicholas Rehabilitation Centre and Psychiatric Hospital at Kalerene, Holy Innocent BPSS Centre in Timau and Methodist Treatment Centre at Kaaga. The study targeted patients who were diagnosed with alcohol dependency, treated and discharged for at least two months. The study included both gender; male and female patients and it took approximately one month for data collection. The study relied on analytical cross-sectional design which was effective for data collection at these single points and allowed for comparison between the two groups; those who were at high risk of relapse and those who were at lower risk of relapse. Data was collected using a standardized tool called Advanced Warning of Relapse Questionnaire (AWARE), a semi structured questionnaire and a key informant Interview. Both Qualitative and quantitative data will be collected and analysed.

1.7 Limitations and Delimitations of the Study

There were few factors which affected this study, however, ways to mitigate them were put in place to ensure correct findings were achieved. The self-reported data collection method from participants introduced two major limitations as participants introduced biases through social desirability bias or recall bias. Some participants in the study were afraid of revealing their true drinking patterns and relapse behavior thus tried to avoid sharing much because they feared judgment. They were assured confidentiality and were reminded the purpose of this study. It was made clear to them the reasons for this study and its goals aimed at. The importance of this study was also shared to them which gave them the courage to share. This otherwise would have affected the study and would have led to incorrect results.

This research took approximately one month to collect data from patients who had been discharged two months earlier unlike if it were to include admission and treatment of patient before data collection. Recruitment at admission would be more effective as it would ensure that standard of care is well outlined. The patients would

be given at least three months of treatment and thereafter aftercare follow up. This would mean that the research would need more time of not less than six months. The patients were given a period of two months after discharge before data was collected. A longer period like six months would have been more appropriate and a later follow up each month.

The chosen specific demographic delivered focused results about relapse risk factors which enabled the research to produce elaborated understanding of this specific issue. The study closely investigated psychological aspects, social variables and environmental circumstances that led to relapse without including biological elements and medical co-morbidities to stay focused on non-clinical relapse factors. This is because as much as the clinical and biological factors are important in this study, they would have introduced a broader way of study as well as will require much more time and resources for example specialists' personnel like the psychiatrists. The direct focus created better guidelines to develop interventions along with policy suggestions specifically aimed at psychosocial recovery elements related to addiction.

1.8 Assumptions of the Study

The study assumed participants provided truthful and reliable information about their alcohol experiences during alcohol use, recovery and relapse experiences. The credibility of self-reported data required that persons feel comfortable sharing their personal encounters truthfully. The supportive rehabilitation centers' environments promoted openness between patients and encourage sincere discussion despite some clients' concern for stigma or fear of negative consequences.

The study assumed that the factors identified to cause relapse demonstrated relevance to the full spectrum of Meru County alcohol addiction patients. This study concentrated on a particular population in selected rehabilitation centres but maintained the belief that its findings applied to additional Kenyan populations dealing with related difficulties. The study established prospects to function as a critical starting point which enables broader discussions and addiction treatment and recovery interventions.

1.9 Operational Definition of Terms

Alcohol addiction	Alcohol addiction is the inability to stop or moderate alcohol drinking despite understanding and knowing harmful side effects, (NIAAA, 2021). In this study, alcohol addiction referred to the condition in which the patients who abuse alcohol find themselves when they indulge into excessive alcohol consumption after treatment.
Alcohol dependency	Alcohol dependency is a chronic brain disease in which an individual over-rely on alcohol and struggles to stop, (American Psychiatric Association, 2022). In this study, it implied over reliance on alcohol by the patients in which it ended affecting various aspects of their lives.
Environmental factors	Environmental factors are external factors which influence and cause high risk levels for alcohol-related difficulties among individuals such as family situations, and social pressure from peers. (Buu & Hohman, 2021). In this study, environmental factors referred to all external elements which contribute to risk of relapse in patients in their surroundings.
Psychosocial Factors	Psychological and social factors which influence drinking patterns and alcohol use disorder vulnerability in people. (Kuntsche & Kuendig, 2022). In this study, it referred to the factors that influence individuals emotionally, mentally, psychologically and in their relations with others.
Rehabilitation	Process of restoring individual to healthy living through training and psychotherapy. In this study, it referred to the process of treatment individuals underwent in the psychiatric medication which comprised of various interventions.
Relapse	Reverting back to alcohol use after a period of abstinence or reduction of alcohol usage. (Kelly <i>et al.</i> , 2021). In this study, relapse referred to process of returning into alcohol

Cravings

consumption after a patient had undergone treatment. This will be determined after the patients have been treated and discharged for at least two months to identify presence of relapse.

Cravings are intense urge or desires to drink alcohol, which can be characterized as a strong want of both psychological and physiological nature that may result into the occurrence of relapse. (Koob & Volkow, 2021). In this study, cravings referred to the intense, emotionally-charged and overwhelming desire or want to drink alcohol.

CHAPTER TWO

LITERATURE REVIEW

2.1 General Overview

According to the World Health Organization (2023), the global public health concern arising from alcohol addiction creates problems for personal wellness, community health, as well as economic productivity. Once the patients treated for alcohol addiction are discharged from the treatment centres, it is noted that many of them record relapse in their course of their recovery journey. This chapter seeks to assess the determinants of risk of relapse among these patients. It explores in depth the psychosocial and environmental factors and how they influence the risk of relapse.

2.2 Prevalence of Risk of Relapse among Patients Treated for Alcohol Addiction

The risk of relapse among patients treated for alcohol addiction varies considerably depending on individual, social, and environmental factors. Recent studies indicate that relapse rates remain high within the first-year of post-treatment, with estimates ranging from 40% to 60% (Smith *et al.*, 2021). Patients addicted to alcohol experience very high relapse rates according to research studies which indicate that more than half of these patients relapse within their first year of treatment. The research by Guille *et al.*, (2021) in America showed that alcohol use disorder patients experience 60% relapse during their first three months of treatment but 80% relapse rate occurs within their first year after treatment. Multiple factors indicate the intricate nature of alcohol addiction therefore long-term intervention approaches are recommended to reduce the occurrence of relapse events. Guille *et al.* (2021) noted that the effectiveness of current interventions can be lowered by their lack of cultural tailoring.

National Institute on Alcohol Abuse and Alcoholism reported that 90% of alcoholics experience at least one relapse (NIAAA, 2022). Studies carried in other countries that recorded high rates of the completion of the inpatient treatment reveal high relapse rates with 33 % in Nepal, 55.8 % in China, and 60 % in Switzerland (Gladys, 2020). These relapse rates are found to occur between one month and one year. A study by Matseke (2020) revealed that proportion of re-admissions in treatment centres are greater than 20% with high incidences recorded among young African adults in Gauteng Province in South Africa. It is noted that 40% to 60% of individuals relapse

after successfully undergoing detoxication and rehabilitation treatments (Kabisa *et al.*, 2020). The prevalence of risk of relapse among alcohol addicted patients is 59.9% in Rwanda (Umubyeyi *et al.*, 2021).

A study by Kilonzo *et al.*, (2022) demonstrated that 65% of rehabilitation graduates at different treatment centers in Kenya suffered a relapse during the six-month period following completion of their programs. The high rates of relapse among patients are attributed to various factors. A study by Wardenaar *et al.*, (2023) illustrates that many factors affect relapse risk. While the multifactorial approach applies to Kenya, most research has so far focused only on individual psychological problems, not the special circumstances present in Kenya. It points out that it is important to learn how these determinants interact locally and design interventions that fit this setting. This study sought to fill this gap by identifying the determinants of risk of relapse and offering suggestion to manage them with an aim of enhancing outcomes for those in recovery.

2.3 Psychosocial Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction

Psychosocial factors comprise of psychological and social factors which influence how people behave, how well they feel mentally and also how they socially interact with others. Cravings, coping mechanisms and social settings contribute to how vulnerable someone becomes to alcohol addiction relapse. Detailed psychosocial factors are explored below;

2.3.1 Cravings

Cravings refers to overpowering desire for alcohol consumption which are frequently provoked by internal feelings or external stimuli and generate bodily reactions including sweating (National Library of Medicine, 2020). They generally appear strong and compel people towards alcohol consumption when particular triggers such as environments, social settings or emotional states activate them. Cravings play an essential role in predicting relapse among people diagnosed with alcohol use disorder (Anton *et al.*, 2020). Individuals who are at high risk of relapse show elevated cravings which surpass their control of resisting drinking triggers (Caldwell *et al.*, 2021). The brain reward processing networks undergo physiological changes that lead

to difficulty controlling impulses as identified by researchers who study this phenomenon (Aston *et al.*, 2020).

Globally, it has been found that cravings are one of the most imminent predisposers of relapse, and their magnitude and prevalence reveal indications of how the treatment is going to turn out (Xie *et al.*, 2022). The World Health Organization (2021) reported that harmful alcohol use creates over 3 million annual fatalities worldwide because of addiction. The most prevalent experience that affects people in recovery is craving which frequently increases the risk of relapse.

In the African context, data is still sparse on how cravings occur culturally and socially, although evidence indicates that environment-related factors, including alcohol availability and social norms have a crucial effect on their induction of relapses (Okyere *et al.*, 2021). The way Africans consume alcohol and become addicted to it exhibits elements derived from their social fabrics and economic conditions (Matzopoulos *et al.*, 2020). Socioeconomic difficulties including poverty, unemployment and restricted access to healthcare and mental health support increasing the risk of relapse because they are widespread on the African continent (Alemayehu *et al.*, 2022).

Alcohol in Kenya is easily available and is a part of the social and cultural norms and traditions, which means that they expose the people who are recovering to situations that trigger a strong urge to use it (Mwangi & Njoroge, 2020). In particular, a combination of these environmental cues, social factors, and habitualization of alcohol consumption can promote the appearance of craving and disrupt abstinence (Otieno *et al.*, 2022). Moreover, access to culturally adapted psychological treatment support and relapse prevention services is scarce, and, as a result, many people are at risk of relapsing whenever the cravings set in (Wainaina *et al.*, 2020). Stigmatization of substance use disorders in the Kenyan population also compounds the problem because people are less likely to seek assistance to help them deal with the desire to use alcohol further putting them at a risk of relapse (Omondi & Mutiso, 2021).

In Meru, where alcohol is practically accompanied by social and cultural lifestyles, such cravings may be enhanced by exposure to the same drinking situation and people, increasing the risk of relapse (Mwangi *et al.*, 2023). Nevertheless, to the

present day, culturally adapted assessment instruments and interventions targeting cravings in Kenyan and Meru population still have a considerable knowledge gap. Closing such gaps by conducting research that is context-specific is the key to coming up with effective relapse prevention measures that reduce the effects of impending cravings in these facilities. This study therefore focused on identifying factors that influenced relapse risk in alcohol addiction particularly in the Meru region of Kenya.

2.3.2 Negative Affect

Negative affect refers to negative emotional states which include anger, shame, sadness and anxiety. The World Health Organization (2020) ^a reported that negative affect represents negative emotions and mood states such as anxiety, depression and anger among patients with alcohol use disorders. Studies have found that patients recovering from alcohol addiction commonly experience changes in their mood state thus increasing the risk of relapse. According to Kelley *et al.*, (2021) people might use alcohol as a harmful way to deal with distress because negative emotions drive them to search for substances. Studies reveal that elevated negative emotional states lead to high alcohol cravings and a higher risk of relapse thus causing treatment professionals to incorporate emotional regulation methods (Boden *et al.*, 2021). Abstinence-period emotional distress frequently causes cravings that pose risks for patients to return to substance use therefore showing the need for mental health care in treatment programs (Tiffany *et al.*, 2020).

The existing alcohol use disorder problem across Africa is made worse by demographic culture, economic factors and inadequate healthcare systems. During 2021, the WHO's African Region Office announced that growing alcohol use reveals more cases of addiction and relapse throughout the area. As reported by Obot and Room (2020), negative affect stemming from economic problems, social disgrace and limited mental health care access drives relapse occurrences in this environment. Research indicates emotional distress adds to the difficulties in staying sober throughout African communities because these areas have restricted access to social support and treatment facilities (Adelekan *et al.*, 2022).

The relationship between negative affect and the risk of alcohol relapse stands out as significant throughout Kenyan populations. Muriungi *et al.*, (2021) discovered that

emotional distress is high in people who relapse. The stigma around mental health in Kenya, increases risk of relapse because people delay seeking help or fail to share their emotional problems (Kilonzo *et al.*, 2022). Even with these findings, there is still an important unknown in what influences some individuals to relapse when they feel negative emotions. Although research shows there is a link between negative emotions and relapse risk, it does not spend enough time examining the circumstances or personal attributes that play a role in this link especially in Meru region. It becomes clear that we need research to discover the main causes of relapse, so treatments can be provided to people who are at greater risk. Addressing these issues may improve the overall long-term effect of treatment by lessening the reasons why some individuals relapse because of sadness. This study focused on this.

2.3.3 Self-efficacy

Self-efficacy refers to the belief that someone holds regarding their capability to address difficult situations. Self-efficacy serves as a strong indicator of treatment success for AUD patients (Witbrodt *et al.*, 2020). Individuals who maintain strong self-efficacy are at a lower risk of relapse because they have sufficient skills to handle stressful situations (Rüsch *et al.*, 2020). When self-efficacy is low individual will feel incapable which leads them to greater vulnerability toward cravings and relapse mainly during times of high stress (Schmitz *et al.*, 2022). Programs that support recovery initiatives by building self-efficacy strength prove important because they create resilience and personal management skills for addiction recovery (Martínez *et al.*, 2021). Globally, individuals who demonstrate higher self-efficacy tend to start recovery actions which leads to continued abstinence thus lowering risk of relapse (Martin *et al.*, 2020).

Self-efficacy stands out as vital for preventing high risks of relapse within Africa because alcohol intake continues to increase while related harm rates continue to rise in this region. The World Health Organization (2021) reports that alcohol use disorders exist as widespread problems which bring along societal discrimination that weakens personal effectiveness. High self-efficacy levels in a Sub-Saharan African substance use study was directly linked to better treatments results and reduced risk of relapse.

According to Kinyanjui *et al.*, (2022) people with high self-efficacy showed statistically better relapse outcomes than those with lower self-efficacy ratings in Kenyan population. Yet, even with this information, we still do not completely understand which things influence each individual's self-efficacy and how these factors combine with others to play a role in high relapse risks. Although we understand that general self-efficacy influences relapse, we know little about how things like personality, social networks or personal experiences might affect this relationship for every individual. The reason for this research uncovered what causes the risk of relapse related to self-efficacy in alcohol addiction in Meru region, with the aim of developing personalized treatments that strengthen a person's confidence and improve lasting results.

2.3.4 Coping Skills

Coping skills are strategies used by individuals to deal with both emotional distress and stress thus ensuring psychological wellness and functioning (Johnson & Lee, 2020). It was found by Henderson *et al.* (2020) that people who are skilled at coping, handle stress and triggers better and this reduces their risk of relapse. The ability of an individual to control their cravings and emotional responses becomes compromised when their coping skills are poor which makes them more likely to experience relapse (Smith & Johnson, 2020). There is the risk of returning to alcohol addiction due to poorly applied coping mechanisms to overcome negative emotions and stress (Lee *et al.*, 2021). Effective coping strategies, like problem-focused methods, are a tremendous tool in the prevention and the minimization of relapse instances (Martinez & Garcia, 2022). The AUD individuals demonstrate more avoidance coping strategies; however, they promote longer addiction and increase the risks of relapsing (Chen & Patel, 2020). On the other hand, problem-oriented coping techniques are more realistic and effective to enable patients relieve stressors thus reducing the risk of relapse (Williams *et al.*, 2023).

People having higher levels of utilization of problem-solving, emotional regulation, and social support are less likely to experience relapse (Smith *et al.*, 2021). On the same note, a study conducted in Australia noted that when the coping skills are enhanced during recovery the possibility of relapse would reduce significantly (Brown & Lee, 2020).

In Africa, there is an indication that culturally adjusted coping strategies play a part regarding the outcomes of relapse. According to a study performed in 2022 in Nigeria, social support and spiritual coping mechanisms were critical factors in ensuring that people remain sober in the recovery process (Adebayo *et al.*, 2022).

Recent studies have started to research on psychosocial influences to risk of relapse in Kenya. Wanjiru *et al.* (2020) found that the absence of adaptive coping skills was associated with increased relapse among the patients of Nairobi-based rehabilitation centers. Nonetheless, little information exists concerning the individual coping strategies that are best suited to prevent the recurrence of the condition in various regions of Kenya.

Meru County is even yet more lacking in literature. No thorough research has been conducted yet on coping strategies, which are employed by patients in the rehabilitation centers in Meru and effects on the patients by these strategies as far as the relapse goes. There have been very minimal studies that investigate the influence of incorporating culturally adapted coping skills training into the rehabilitation program has on relapse rate Meru region of Kenya. This study sought to fill this gap.

2.3.5 Relapse Expectation

Expectancy is what an individual predicts or thinks the probability is, of him or her returning to alcohol use following treatment. The behavior of individuals is influenced heavily by their expectancies regarding relapse and beneficial outcomes from drinking alcohol. The higher the relapse expectancy, the higher the risk of related relapses, because it has been related to motivation and self-efficacy (Miller *et al.*, 2021). In some countries, research studies established that when patients happen to perceive the relapse as unavoidable, the likelihood of pursuing the relapse-preventive behaviors declines (Johnson & Williams, 2020). People adopt alcohol relapse behavior after believing alcohol enables problem resolution or brings social advantages (Pawlak *et al.*, 2022). Training in adaptive coping skills assists patients to change their expectancies which leads to healthier behavioral outcomes and strengthened recovery resilience (Knott *et al.*, 2021). An individual's behavior and their decision-making process gets greatly affected when they have expectations of relapse thus increasing

their risk of relapse (Witbrodt *et al.*, 2020). People suffering from AUD tend to rely on unhealthy coping habits such as alcohol abuse when anticipating relapses because of high relapse expectations. Individuals follow the Self-Perception Theory by watching their behavior to build their self-concept yet they develop strong relapse predictions when they believe they cannot maintain abstinence.

According to a South African study of 2022, beliefs of patients regarding relapse pointed to a significant influence on their aftercare programs involvement (Nkosi & Dlamini, 2022). These results have similarly been reported in Ethiopia, whose population showed that recovery trends depended on their relapse expectancy (Tadesse *et al.*, 2021).

The study conducted in Kenya by Otieno *et al.*, (2021) found that relapse expectancy was also a strong predictor of relapse in patients in Nairobi indicating that one should consider addressing the opinions among the patients about relapse during treatment. With the research done so far, it is clear that we lack good information on how personality, social environments and earlier experiences play a role in using or failing to use various coping strategies thus causing risk of relapse especially in Meru. The way these variables affect people together in different populations are not yet clearly understood, since most studies have looked at them independently. Given this gap, the present study was important because it identified the main reasons for coping and relapse attitude which can lead to better interventions to reduce relapse risks in people with alcohol addiction.

2.4 Environmental Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction

Environmental factors are external factors or condition which do influence how people behave as well as their health outcomes. The environmental risk factors which impact alcohol addiction recovery consist of social, economic, cultural and physical components which either help or obstruct recovery. Research demonstrates that areas marked by poverty and unstable social conditions create environments which significantly increase the probability of alcohol relapse according to Wang *et al.*, (2020). More factors are explored below.

2.4.1 Social Context

The social context or environment plays a vital role in the ecological factors that cause relapse (Moyers & Miller, 2020). The social context comprises several elements; social networks, economic status, community beliefs about drinking and support systems. Supportive social networks can significantly bolster recovery efforts, whereas environments characterized by negative influences, such as peers who drink heavily or unsupportive family members, can increase the risk of relapse (Rogers *et al.*, 2021). Social norms and the behaviors of close associates heavily influence an individual's alcohol consumption patterns; for instance, individuals are more likely to relapse when surrounded by others who normalize or encourage drinking behaviors (Sweeney *et al.*, 2022). Conversely, engaging with supportive peers, such as those found in recovery groups, can enhance commitment to sobriety and reduce relapse rates (Moos *et al.*, 2020). Relapse rates reduce when people maintain supportive relationships that promote abstinence but increase when their social networks encourage alcohol consumption (Klingemann & Hunt, 2020). Social media exposure can lead to risk of relapse especially users encounter content that promotes alcoholic beverages and substance use (Garcia-Alvarez *et al.*, 2020). Addiction relapse risks increase in people in recovery when they experience high-stress situations or face discrimination due to addiction or lack access to proper treatment (Khantzian, 2020).

Public health issues are growing throughout Africa because alcohol consumption rates are consistently increasing. The manner in which cultures relate to alcohol use and societal tolerance for drinking differs completely from one nation or community to another. According to Matsiliza *et al.*, (2020) heavy drinking has become routine behavior in urban communities and this contributes to high risk of relapse among patients. Sobriety faces challenges among recovery individuals during traditional cultural practices because alcohol frequently appears at community events and social gatherings increasing risk of relapse.

Kenya and numerous other African nations distribute their energy in addressing alcohol consumption problems and addiction cases. The National Authority for the Campaign Against Alcohol and Drug Abuse (NACADA) 2021, identifies alcohol as the main substance clients abuse throughout the country while connecting its usage to major societal problems. Unemployment, familial pressure and peer group influence

serve as principal social factors that elevate risk of relapse in Kenya. According to Chepkoech (2021) the social environment recirculating alcoholics after sobriety increases their likelihood for reverting into drinking behavior. People who face negative public opinions and stigma about addiction are left isolated which makes them more susceptible to substance abuse relapses.

A significant lack of knowledge still exists regarding the precise impact of certain social drivers that tend to influence the risk of relapse rate in the Kenyan context, including community cohesion, peer pressure, and family support. The fact is that most of the available research did not address these social aspects adequately on local levels, and it was necessary to conduct a study that is anchored on culturally-relevant social determiners of risk of relapse particularly in Meru region. This gap was filled to streamline the creation of culturally competent, specific interventions to enhance long-term recoveries.

2.4.2 Access to Alcohol

The environments that promote easy accessibility of alcohol either in the home, in social settings or in stores increases relapse cases particularly during stressful times or moments of craving. Studies have shown that individuals recovering from alcohol use disorder (AUD) are more likely to relapse when they live in environments with numerous alcohol outlets thus increasing the likelihood of impulsive drinking decisions (Ghosh-Dastidar *et al.*, 2020). People who easily obtain alcohol will tend to return to prior substance usage (Klingemann & Hunt, 2020). The frequent exposure to drinking temptations increases their chances of shifting into complete alcohol use. The availability of alcohol gets enabled through social networks and environmental cues that include bars, liquor stores as well as common occurrence of drinking at social gatherings. Individuals residing in places with abundant alcohol availability face elevated dangers of developing drinking problems as well as experiencing relapse.

Globally, the rates of alcohol addiction and relapse are heavily affected by how easily people can access alcohol. The World Health Organization (2021) reports that alcohol usage produces substantial disease-related fatalities which number over 3 million deaths each year. Regions that culturally endorse the drinking habit increase a

drinking culture. The easy accessibility of alcohol drives up drinking levels which boosts alcohol dependency disorders that result in increased relapse rates among people in recovery. Research demonstrates that people with easy access to alcohol tend to experience higher rates of relapse after encountering both triggers and stressful situations as well as social pressures (Kelley *et al.*, 2021).

The problems related to alcohol usage and addiction exist at a high level throughout Africa. The growing alcohol market in Africa has led to increasing alcohol use disorders among the population. (WHO, 2021). Rising alcohol consumption rates can be attributed to multiple factors including alcohol regulation relaxations, cheap drink availability as well as targeted marketing toward youth populations (Nduka *et al.*, 2021). The availability of alcohol throughout Africa intensifies the difficulties in treating addiction and achieving recovery for patients.

The social acceptance of alcohol consumption across many nations including Kenya sets up situations which may cause recovering people to return to their addictive behaviors. The accessibility of alcohol in Kenya creates a special concern for the country. Kenya has a rapidly expanding alcohol industry which produces both approved and unauthorized alcoholic beverages at multiple breweries and distilleries throughout the nation. The research shows that simple access to alcohol has both a positive impact on drinking patterns and negative effects on relapse rates among people who suffer from alcohol use disorder (Odinga's *et al.*, 2023). Widespread variations in alcohol sale regulations by the Kenyan government have resulted in widespread availability of alcohol products (Wamala *et al.*, 2021). The combination of economic social factors including poverty and unemployment makes the situation more challenging because people often use alcohol to manage their circumstances. Many recovering addicts in Kenya report that easy access to alcohol acts as a major factor leading to relapse according to research findings (Kiura & Busolo, 2022).

The study by Mwangi (2022) provides a qualitative analysis showing that the community norms and the availability of local brews largely contribute to alcohol consumption patterns and relapse in patients in a rehabilitation facility such as Meru. However, there exists little information on the direct effect of access to alcohol on risk of relapse in Meru. This study sought to fill this knowledge gap.

2.4.3 Exposure to Triggers

Exposure to triggers is another environmental factor that can contribute to relapse. Triggers are stimuli that can prompt drinking behavior such as specific locations, people or emotions. They are cues in the environment that can provoke cravings or prompt individuals to drink. Common triggers include specific locations, activities, or emotional states associated with previous drinking behaviors (Hunt *et al.*, 2021). Individuals who are exposed to triggers on a regular basis are more likely to experience cravings and relapse (Klingemann & Hunt, 2020). Studies have shown that exposure to smoking or vaping is associated with increased risk of relapse among individuals with a history of substance use disorders (Buckner *et al.*, 2020). Similarly, exposure to social media triggers such as posts about parties or drinking, can increase the risk of relapse among young adults (Garcia-Alvarez *et al.*, 2020).

Individuals recovering from alcohol addiction may find themselves more vulnerable to these triggers during high-stress situations or when they encounter reminders of past drinking experiences. Research indicates that people in recovery who are repeatedly exposed to such triggers are at a significantly higher risk of relapse (Bach *et al.*, 2022). Alcohol addiction maintains its status as one of the worldwide issues which affects millions of people. WHO (2021) reports that alcohol causes annual deaths which demonstrates the severe nature of addiction problems. The global relapse rates for alcohol use disorder (AUD) reach between 40-60% and these numbers are influenced by many factors including the environmental triggers. The factors that lead to cravings include both social settings that involve alcohol use and emotional states which trigger cravings (Sinha, 2020). Research conducted by Shava *et al.*, (2021) demonstrates that traditional acceptance of alcohol consumption creates obstacles for recovering individuals to maintain abstinence because they encounter frequent environments promoting alcohol use.

Nightlife activities and social gatherings in Nairobi's urban environment focus on bars and clubs that act as major trigger points for relapse. Participants in a qualitative study described being often drawn to drink during encounters with social settings where drinking behavior was common (Mutua *et al.*, 2022). Poverty, joblessness and

emotional triggers lead people to drink more frequently as a way to cope according to Karanja and Mugwe (2021).

The recovery environment depends heavily on cultural elements which influence its development. Beliefs about alcohol that exist in traditional settings continue to maintain addiction patterns. During community celebrations alcohol consumption creates regular exposure to triggers that test the sobriety of recovering individuals (Omondi & Kabiru, 2022).

It has been found that in the Meru County, traditional social functions, consumption of locally produced brew, and community coercion are key triggers of relapse in recovering people (Maina, 2022). Although the literature agrees that exposure to triggers is a key factor in relapse, little empirical research has focused on specific exposures to triggers within the community and the result is no clear picture of contextual factors that are contributing to risk of relapse within this context. This study sought to identify the key triggers that determine risk of relapse in Meru County.

2.4.4 Stressful Life Events

Environmental stress from major life events plays a major part in leading people to relapse such as job loss, relationship difficulties, or significant personal losses. Stress causes many people who have recovered from addiction to return to substance abuse (Cicchetti *et al.*, 2020). Globally, it is noted that people who face stressful events often use alcohol as self-soothing behavior and risk developing complete substance abuse (Klingsberg *et al.*, 2020). Relapse cases increase among those with alcohol addiction exposure histories especially when they experience traumatic domestic violence or financial instability (Cicchetti *et al.*, 2020). The relationship between stress and risk of relapse is further complicated by the individual's ability to cope with stress; those using maladaptive coping strategies are more susceptible to relapse during periods of intense stress (Cohen *et al.*, 2022).

Stressful life events affect alcohol consumption in Africa more strongly because of existing socio-economic problems, political instabilities and health crisis. According to Njenga (2022), multiple stressors including poverty, unemployment, and climate

change factors drive African people to consume alcohol as a way to cope with their struggles. Such environments diminish the ability of people to properly manage their stresses because of their limited access to mental health services.

Research shows that stressful life events like economic adversity, family conflicts as well as experiencing violence leads sober people to have greater chances of returning to alcohol abuse (Kisumu *et al.*, 2023). The COVID-19 pandemic in Kenya created more stress because lockdowns generated both unemployment and mental health deterioration and social isolation that led to an increase in alcohol use among people who relapsed (Muriuki *et al.*, 2021). Recovering individuals face an escalating problem due to insufficient support systems which leads them to resume alcohol use to manage their overwhelming stress.

Although the relationship between stressful life events and risk of relapse is well documented at global and national levels, there exists a gross knowledge gap on how the stressful life events influence the risk of relapse specifically in the rural Kenyan communities such as Meru County.

2.6 Theoretical Framework

The study required a comprehensive theoretical basis to investigate factors that led to risk of relapse among alcohol addiction patients. Such a framework collected significant psychological and sociocultural theories of addiction to show the way individual characteristics and social aspects and environmental elements work together to produce relapse.

The conceptual framework of the Addiction Disease Model explains addiction as a relapsing, chronic, brain disorder with neurobiological modifications that cause the inability of an individual to manage substance use (Koob and Volkow, 2021). It also describes addiction as a chronic disease accompanying compulsive substance usage even when producing adverse effects (Marlatt & Witkiewitz, 2020) making it a fundamental theory in this study. In this research, the model offered a ground breaking basis on the multifaceted nature of relapse. It also led the research on the biological, psychological and social determinants like cravings, environmental stimuli, psychological health, and social support networks of the risk of relapse.

Putting the addiction in the framework of a disease, the model underlines that the relapse is caused not only by the moral failure but is based on the neurobiological changes and psychological weaknesses that require thorough treatment methods that target the causes (Markus Heilig *et al.*, 2021). In turn, this theoretical approach formed the basis of the research on determining factors that contribute to the relapse risk in order to find out the value of the combination of medical, psychological, and social intervention as a way to achieve efficient long-term recovery.

The Addiction Disease theory regards addiction mainly as a long-term brain disease that leads to changes in a person's behaviors and decision making (Volkow & Morales, 2020). Using this approach, alcohol addiction is regarded as a health-related disease, therefore health professionals' help is seen as vital for guiding patients when relapse occurs.

The model adds that both chemical imbalances in the brain and a person's family history can play a part in their risk of relapse (Sinha *et al.*, 2021). It also points out that regular treatment, correct use of medications and therapy can keep addiction under control and stop someone from relapsing. Having this framework allows researchers and professionals to integrate pharmacotherapy and psychosocial support which is consistent with the overall rehabilitation strategy in use at the facility.

On the other hand, this model does provide great insights, yet it has a few limitations. A criticism is that biological factors may receive more attention than environmental or social ones, including influence from peers, economic status or stress, all of which can contribute to relapse (Kerr *et al.*, 2020). At the same time, the model unintentionally may encourage thinking that behavior is driven by biology which might limit efforts toward self-improvement. Furthermore, overemphasizing the theory may cause us to miss the ways that people's backgrounds and cultures contribute to their chances of addiction and relapse. This study utilized the Addiction Disease Model as it addresses the biological, psychological and social factors.

2.7 Conceptual Framework

Independent Variables

Dependent Variables

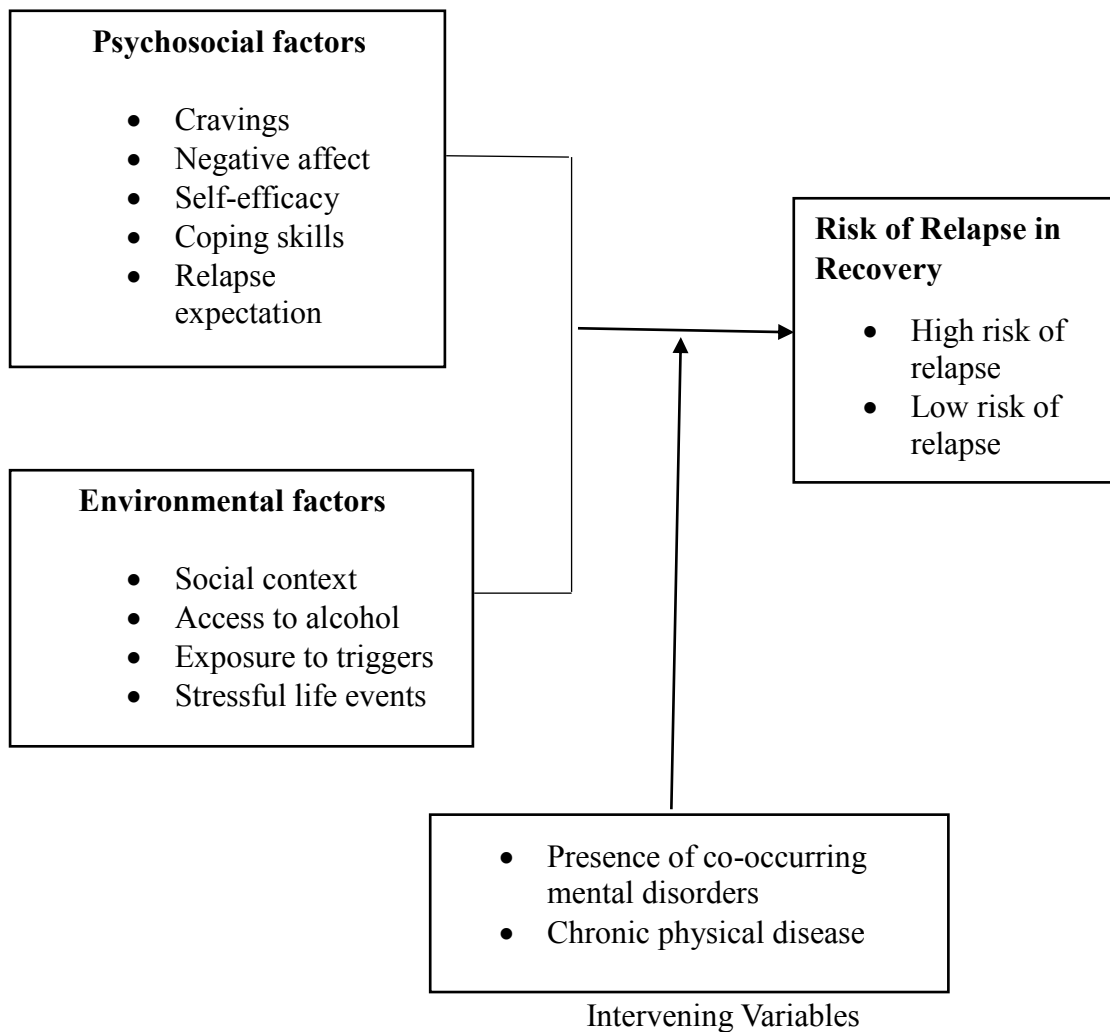


Figure 1: Conceptual Frame Work: (Modified from Literature review, 2025)

2.7.1 Variables Interaction on Conceptual Framework

The Vulnerability to risks of relapse in people who are recovering from alcohol dependence is determined in this model by a dynamic interaction of psychosocial, environmental, and health-related factors. The psychosocial variables, including cravings, negative affect, self-efficacy, coping skills, and relapse expectations, are directly associated with the risk of relapse. In this regard, increased cravings and negative affect may make a person more susceptible to relapse, whereas high self-efficacy and coping skills may be protective factors. This risk can either be aggravated or alleviated by environmental factors such as social context, alcohol

access, exposure to triggers and stressful life events depending on their nature and extent. The risk of relapse is likely to increase under the influence of external stimuli and easy access to alcohol especially in stress.

Also, these relationships can be further adjusted with health-related variables such as chronic physical diseases and co-occurring mental disorders. These intervening variables can also determine the effect of the psychosocial and environmental factors on relapse such that the availability of mental health conditions may mitigate coping skills or heighten trigger sensitivity, thus increasing the risk of relapse. On the whole, the relapse risk is predetermined by a complicated interplay between internal processes and external factors and health conditions, which is why it is important to refer to these mutually dependent variables when developing effective relapse prevention plans.

CHAPTER THREE

METHODOLOGY

3.1 Location of the Study

The study was conducted at selected rehabilitation centres in Meru County. These centres included St. Nicholas Rehabilitation Centre and Psychiatric Hospital, Holy Innocent BPSS Centre Timau, and Methodist Treatment Centre Kaaga. These rehabilitation centres were selected as they were the leading rehabilitations that serve a high number of clients of both gender within Meru. The choice of these rehabilitation facilities also stemmed from their comprehensive treatment programs, which were well-documented and thus, made them ideal locations to investigate relapse factors in a controlled and structured environment. Meru County is situated in the Eastern Province of Kenya, bordering Tharaka-Nithi County to the south, Isiolo County to the north, and Laikipia County to the west.

St. Nicholas Rehabilitation Centre and Psychiatric Hospital is located at Kianjai town, along the Meru - Maua Road, at Kalerene stage, in Meru County, Kenya. This facility's geographic coordinates are approximately 0°10'31.6" N° latitude and 37°45'41.3E longitude. It is a level three private facility, owned an individual with approximately forty alcohol patients treated in a month. It has thirteen Clinicians.

Methodist Treatment Centre is located at Kaaga, in Meru town along the Meru- Maua Road. This facility's geographic coordinates are approximately 0.065385°N latitude and 37.653813°E longitude. This is a level three facility, sponsored by Methodist Church in Meru. It has eight clinicians and treats approximately twelve alcohol patients in a month.

Holy Innocent BPSS Timau Centre is located at Timau, along the Meru-Nanyuki Road. This facility's geographic coordinates are approximately 0.0839°N latitude and 37.2362°E longitude. This is a level three facility, sponsored by the Congregation of Sisters of the Servants of Holy Innocents under Catholic Church. It treats approximately forty-five alcohol patients in a month.

3.2 Research Design

The study relied on analytical cross-sectional design with mixed-method of collection of data. This type of research design allowed for comparison between two groups; those found to be at high risk of relapse and those at a lower risk of relapse. Data was collected from all patients diagnosed, treated for alcohol addiction and discharged for at least two months. They were assessed for risk of relapse which revealed patients who were found to be at high risk and low risk of relapse. Determinants influencing the risk of relapse in these two groups were assessed and comparison between them made.

3.3 Study Population

The study population included patients diagnosed, successfully treated for alcohol addiction and discharged for at least two months at St. Nicholas Rehabilitation Centre and Psychiatric Hospital, Methodist Treatment Centre and Holy Innocent BPSS Timau Centre. There was a study population of 130 respondents who participated in the study from the three selected facilities. The population is shown in the table below:

Table 1: Treated Patients Record in 2024

	St. Nicholas Rehabilitation Centre and Psychiatric Hospital	Holy Innocent BPSS Timau Centre	Methodist Treatment Centre Kaaga	Total
January	25	220	15	260
February	30	40	11	81
March	40	45	15	100
April	39	49	14	102
May	45	236	20	301
June	108	35	13	155
July	40	40	16	96
August	20	32	13	65
September	45	30	22	97
October	40	40	20	100
November	42	39	16	97
December	39	41	15	95
Total No. of clients	513	847	190	1550
Monthly Average	42.75	70.58	15.83	129.16

Study	43	71	16	130
Population	Specific rehabilitation Centre's records, 2024.			

3.3.1 Inclusion Criteria

The study included all patients who were 18 years of age and above who had been diagnosed and successfully treated for alcohol addiction in the said selected rehabilitation centres. They were also expected to have been discharged and stayed for two months outside the rehabilitation centre prior to data collection. In order to identify the patients treated for alcohol addiction the facilities' records were used. This guided in knowing those who would only be allowed to participate in the study since the clinical reviews were meant for all patients treated for all conditions. It was not limited to alcohol addiction cases only.

3.3.2 Exclusion Criteria

The research excluded any patient who did not consent to it. Also, patients who had been diagnosed with other mental conditions were exempted as this was likely to interfere with the objectives of the study.

3.4 Sample Size Determination

Since the population was small, all the participants were included in the study. Census method was used whereby the population size was equal to the sample size. ($N=n$). The sample size was 130 participants.

3.5 Sampling Techniques

The study sites were selected through purposive sampling. The selected facilities were found to be among the leading rehabilitation centers in Meru County in terms of admitting many clients, which made them an ideal location to study on the determinants of risk of relapse. They also served a diverse clientele of both genders, which provided an opportunity to explore the multifaceted factors contributing to the risk of relapse among individuals from varied socio-economic and cultural backgrounds. Due to the many patients treated in these facilities, it was easier to get the cases of interest for this study and thus helped achieve the objectives of the study.

The participants were selected through census method by including all patients treated for alcohol addiction, discharged and also those who met the criteria for this study. For the Key Informant participants, only the head of psychiatry and head of counselling who were in the facility during the study were selected to participate.

3.6 Data Collection Instruments

This study collected both quantitative data and qualitative data. Data was collected using a standardized tool called Advanced Warning of Relapse questionnaire, semi structured questionnaire and key informant interview guide. The key informant interview was used in the study to collect qualitative data from the clinicians in charge who were in the facilities, that is; the psychiatrists and psychologists. The psychometric tool called Advanced Warnings of Relapse Questionnaire and semi structured questionnaire were used to capture quantitative data from the patient. The semi structured questionnaire was structured as per the objectives of the study and the literature review. It was used to capture data from the participants so as identify the psychosocial and environmental factors and took approximately ten minutes. The standardized tool also took ten to fifteen minutes to capture data. The key informant interview was used to interview the clinicians. It took approximately seven minutes for each clinician.

3.6.1 Semi-structured Questionnaire

The semi-structured questionnaire, comprising of three sections was used to collect quantitative data having been developed by the researcher. The first section briefly captured demographic information of the respondents. The second section (psychosocial factors) and third section (environmental factors) comprised of 12 closed-ended questions which were easy to understand. In the twelve (12) questions, they focused on the psychosocial factors such as cravings, negative affect, self-efficacy, coping mechanism and relapse expectancy. The questions also captured environmental factors such as social environment, access to alcohol, exposure to triggers and stressful life events.

3.6.2 Advance Warning of Relapse Questionnaire

Advance Warning of Relapse Questionnaire is a tool developed by Gorski and Miller (1982) with 28 Likert scale questions used to access warning symptoms of relapse. In

this study, it was used to measure the risk of relapse among patients treated for alcohol addiction. There were 7 numerical scores in each item (questions) whereby each number represents a rate as follows; 1 for never, 2 for rarely, 3 for sometimes, 4 for fairly often, 5 for often, 6 for almost always and 7 for always. The participants were made aware of what the above meant. After the respondents' responded, scoring was done to access levels of relapse.

Scoring of AWARE is done by calculating the circled numbers and getting the total scores apart from five items comprising of number 8, 14, 20, 24 and 26 in the questionnaire. This is because the stated items are reversed during scoring whereby their circled numbers represent a reversed score. 1 circled represented score of 7, 2 circled represented score of 6, 3 circled represented score of 5, 4 circled represented 4, 5 circled represented 3, 6 circled represented 2 and 7 circled represented a score of 1. The total score is interpreted with a guided percentage which ran from 28 to 196 depending if the patient had been drinking or not within the last two months. This guided in scoring and interpreting in this study. The higher the score the higher the risk of relapse a patient registers. The interpretation of the scores is as shown in the table below;

Table 2: AWARE scoring guide

AWARE Score	If <i>already drinking</i>	If <i>abstinent</i>
28-55	37%	11%
56-69	62%	21%
70-83	72%	24%
84-97	82%	25%
98-111	86%	28%
112-125	77%	37%
126-168	90%	43%
169-196	>95%	53%

Extracted from the standardized tool (AWARE) scoring guide

3.6.3 Key Informant Interview

The key informant interview questionnaire was five-item semi structured questionnaire which was used to interview the Clinicians at the site. This was

purposed to collect qualitative data by exploring their experiences and views on determinants of risk of relapse in alcohol addiction capturing the themes in their responses.

3.7 Pre-test

Prior to the actual data collection, data collection tools were used on 10% of the sample size which was 13 patients at St. Patrick Counselling and Treatment Centre which is located at Igembe Central Sub- County in Meru County. This is a rehabilitation which is comparable to the selected locations of study. The comparable factors include a good number of clients admitted there and also the facility does admit both genders. The facility also utilizes the Minnesota model of treatment which is also used at the selected rehabilitation centres. Pretest helped determine if the semi-structured questionnaire and key informant interview were clear to the respondents, allowing for any necessary changes if needed. It also gauged time needed to complete the questionnaire for each respondent.

3.7.1 Validity Test

The AWARE tool was adopted because psychometric validation studies including confirmatory factor analysis have demonstrated its internal consistency, convergent validity and predictive validity that it can indicate those who are at risk of developing further relapse, (Ketter *et al.*, 2020). The AWARE successfully quantifies subjective experiences and relapse relationships according to research conducted in 2021 by Smith *et al.* (2021). The validity of the semi questionnaire and the key informant interview guide was established through content and construct validation. This is where the experts in addiction treatment and psychology field including the counselling, clinical and medical psychologists, addiction counsellors and psychiatrists confirmed that they adequately covered the relevant constructs and later assessed through factor analysis.

3.7.2 Reliability Test

To ensure reliability, the semi-structured questionnaire and the key informant interview were pretested with a small sample of 13 patients at St. Patrick Counselling and Treatment Centre. In order to measure the consistency of the tools, test-retest method was employed. The test-retest technique involved repeating the same

questionnaires two weeks later on the same group of respondents. This period was selected to reduce the bias in recalling the information but still to establish the stability of the perceptions and actions of the respondents pertaining to alcohol relapse. Reliability coefficient was found to be 0.804 and this was acceptable as it more than 0.7. A level of Cronbach Alpha of 0.7 or more was deemed acceptable as it implied that the items in each of the instruments could reliably measure focused constructs (Tavakol & Dennick, 2021). This approach enabled the determination of any confusion or contradiction to the items on the questionnaire and rectify them prior to the actual data collection taking place.

For the standardized tool, AWARE, demonstrated high internal consistency through Cronbach's alpha scores higher than 0.70 in various studies which confirmed that its items accurately measure the same construct according to Johnson *et al.* (2020). The AWARE questionnaire exhibits good test-retest reliability since research subjects maintain similar scores throughout different time periods thus ensuring its practical value for clinical measurements and personal monitoring applications.

3.8 Data Collection Procedures

The study relied on mixed method of data collection whereby both qualitative and quantitative data were collected. According to research by Chawin *et al.*, (2024) relapse rates are high within the first three weeks to six months after patients have been discharged from treatment. The patients admitted in the facilities underwent treatment and were discharged. After two months following the discharge, all patients diagnosed with alcohol addiction and those who met the inclusion criteria were enrolled for the study. A list of patients diagnosed and successfully treated for alcohol addiction was got from the selected facilities' records through the guidance of the in-charge clinicians together with their dates of clinical reviews when they were expected to report back to the facilities. This included only those who had been discharged two months prior. Some confirmed when they would be available while others did not after communication between the facilities and the discharged patients. The days of clinical reviews and facility's events such as free camps were utilized for data collection by the researcher as many patients showed up. For those who came from far, they were reached out virtually.

For those who reported in the facility, their data was collected in counselling rooms secured by the facility management within the facilities and was captured by use of pen and papers. After their clinical review they were directed to the counseling room where the data collection was taking place. There was no video or audio recording of the patients who were participating in the study. They were guided on what this study was about and its goals aimed at achieving as well as its benefits. Once the participants understood, they signed consent forms out of their own willingness. Confidentiality was assured to each of them.

Thereafter the participants were guided on the first tool which is Advanced Warning of relapse questionnaire. They were taken through the 28 items on AWARE. The participants were also taken through the semi-structured questionnaire purposed for study. Thereafter data collection process began in there being no further questions from the respondents. The selected clinicians in the said facilities were also interviewed using the key informant which was used to identify the themes arising. This process also took place in the same counselling rooms' withing the facilities. They were guided on what the key informant entailed before it was administered to them. Their responses were noted on key informant guide. The study took a period of one month for data collection.

3.9 Data Analysis

The collected data was entered manually into IBM SPSS statistic computer software. Data cleaning was done by verifying both transmission errors and absent data points. There were no missing data on any variable as all the items were well captured. Variables were checked to ensure that they were well coded. Quantitative data was analysed through descriptive analysis. The response of the participants was summarized through a descriptive statistic whereby the proportion and the frequency were used to describe categorical variables. Defined variables were used to represent the identified items of the questionnaire. For instance, the rows corresponded to the respondents while the columns represented the responses. An analysis of statistical description demonstrated participant attributes and different relapse factor occurrences. Measures of frequencies and percentages was calculated using SPSS tools. Inferential statistics assessed different factors affecting relapse through inferred relationships between them. The study employed chi-square tests and binary logistic

regression analysis techniques to identify the relationships between independent and dependent variables. Binary logistic regression models were applied to determine the independent predictors of the outcome of relapse, controlling for possible confounders. Statistical results significant at $p < 0.05$ was considered relevant because they demonstrate probabilities below 5% chance of occurring by random factors.

Qualitative data was gathered through interviewing the key informants, that is, psychiatrists and psychologist, to have a profound understanding of their views and experiences. The transcription was done in a verbatim so that the accuracy and context of responses would not be lost. The qualitative data were handled and analyzed using thematic analysis. This entailed acquainting with the transcripts, and then coding, with the view of coming out with meaningful sections pertaining to the research objectives. Afterward, codes were grouped into themes and subthemes based on the recurrent review that enabled the establishment of patterns and important observations of the data set. The thematic analysis allowed conducting a systematic and stringent investigation of the views of the clinicians, which was supplemented by the quantitative results of the study.

Table 3: Data Analysis Matrix

Specific Objectives	Variables	Type of Variables	Statistical Analysis Technique
To determine the prevalence of risk of relapse among patients treated for alcohol addiction	Risk of relapse	Categorical	Descriptive statistics (proportions in %)
To identify the psychosocial factors associated with risk of relapse among patients treated for alcohol addiction	Cravings Negative affect Self-efficacy Coping skills Relapse expectation	Categorical	Descriptive statistics (proportions in %) Inferential Statistic (Chi-square and logistic regression)
To determine the environment factors associated with risk of relapse	Social context Access to alcohol Exposure to triggers Stressful life events	Categorical	Descriptive statistics (proportions in %)

among patients treated for alcohol addiction	Inferential Statistic (Chi-square and logistic regression)
	Thematic Network Analysis

3.10 Ethical Considerations

Several ethical considerations were ensured in this study. There was a need for scrutiny both at departmental and faculty level during the defenses. Thereafter, approval from Chuka University Institutional Ethics Review Committee was acquired (Appendix 12). With an introduction letter from the University's Post Graduate Office, permission was sought from the local authority at Meru County Office health department and the National Commission for Science Technology and Innovation (NACOSTI), (Appendix 11). Thereafter approval from the management of the three selected rehabilitation Centres was sought.

With approval from the study sites' management (Appendix 8, 9 and 10), the researcher started meeting the participants who reported in the facilities and the recruitment process of participants began. Each participant gave their consent before taking part in the study by signing on the consent paper. This consent also allowed the participants a room to withdraw whenever they felt uncomfortable to continue with the study. This took place once the participants had been made aware what the research study was all about.

Privacy and confidentiality were maintained by ensuring that passwords were used where the data collected during the research was stored. Manual papers were stored in a protected place such as lockable shelves. The study ensured informed consent (Appendix 1), anonymity confidentiality and protection of participants' rights throughout the study process. The participants' confidentiality was ensured by allowing only the authorized to be involved in the study. Anonymity in the questionnaire was also observed as the participants did not state their names.

The study strived to engage with community stakeholders, including treatment providers and policymakers to ensure that research findings were ethically and culturally sensitive and translated into meaningful interventions that address the needs

of individuals at sites of study. Scientific integrity of the study was ensured. Study malpractices such as plagiarism and falsifying data was avoided in the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Response Rate

A total of 130 patients treated for alcohol addiction were enrolled in the study which represented 100% response rate. The demographic data provided by respondent consisted of various classification which gave the breakdown of the group of people who took part in this research. This aimed at determining the demographical profile of the patients in relation to age, sex, marital status, level of education and occupation status, creating an image of the population being studied in mind.

4.2 Demographic Characteristics of the Respondents

A majority 79 participants (60.8%) of the respondents were between the age of 20 to 34 years followed by age group of 35 to 49 years with 40 participants which is 30.8 %. The number of participants who had 41 to 64 years and those who had 65 to 79 years were 10 and 1 respectively which was about 7.6 % and 0.8% respectively, (Table 4).

These results implied that young adult and middle-aged individuals represented the highest proportion of the patient groups in this study, and the older adult population was marginally represented. The study concluded that the younger generation is mostly affected by alcohol addiction and sought treatment compared to the older generation. This concurred with a study by Icyizere Psychotherapeutic Centre (2021) which found that patients aged between 18 and 33 were at a risk of relapse with a prevalence of 54.2%.

There were 113 males and 17 females from the patients who participated. This implied that males were the largest group with a percentage of about 86.9% of the sample as compared to 13.1% who were females, (Table 4). This implied that there were more males than females represented in the sex distribution of the patients being treated for alcohol addiction in the chosen facilities. Studies have observed that population for alcohol addiction treatment are dominated by male counterparts. A meta-analysis and systematic review by Wang *et al.* (2020) discussed gender disparities since men were more likely to be treated in the case of an alcohol addiction and exhibited other relapse patterns than women.

Table 4: Demographic Characteristics of Patients Treated for Alcohol Addiction at Selected Rehabilitations in Meru County, Kenya

Variables (n =130)	Frequency	Proportion (%)
Demographic characteristics of respondents		
Age (in years)		
20 – 34	79	60.8
35 – 40	40	30.8
20 – 34	10	7.6
65 – 79	1	0.8
Sex		
Male	113	86.9
Female	17	13.1
Marital status		
Married	28	21.5
Single, never married	50	38.5
Separated	33	25.4
Divorced	10	7.7
Cohabiting	9	6.9
Education Level		
Primary	23	17.7
Secondary	57	43.8
Tertiary	50	38.5
Occupation status		
Formally employed	25	19.2
Self employed	26	20
Unemployed	79	60.8

The sample size obtained consisted of 50 respondents who were singles and had never married which represented 38.5% of the sample. The separated group totaled 33 participants (25.4 %), with married individuals being 28 participants (21.5 %). The number of the divorced was 10 participants (7.7%) and cohabiting were 9 participants (6.9%), (Table 4). The implication of the distribution is that majority of the participants were singles who had never married followed by those separated, a profile that reflects high diversity of marital status in the sample. This difference in marital status implied that it may have an effect on the gleaning of the factors that may contribute towards the risk of relapse among the patients in this context. A recent study by Ahmed *et al.* (2023) state that married people are less likely to relapse than single, divorced, or separated individuals, due to the presence of a spousal and social

support system. Marriage is linked to increased treatment adherence and longer sobriety, Khan *et al.*, (2022).

Most of the participants had undergone secondary education with a total of 57 (43.8%) of the participants. The respondents who had undergone tertiary education were 50 (38.5%). There were 23 respondents who had primary level education, accounting for 17.7% of the respondents. There were no single respondents who had not attained some level of education, (Table 4).. These results pointed to the fact that the highest percentage of the patients among the study were at the secondary level of education, with quite a large percent having tertiary education, with a smaller group only having a primary education.

The occupation status of the respondents revealed that majority of them were unemployed having 79 respondents (60.8%). The self-employed were 26 (20%) while the formally employed constituted of 25 (19.2%), (Table 4). This showed that a large percentage of the respondents were unemployed which could possibly affect their risk of relapse. The fact that there were relatively fewer participants who were formally employed, and self-employed participants implied possible socioeconomic factors that could affect the risk of relapse indicators among the sample population. According to studies, unemployment is also one of the factors that predisposes to alcohol addiction and an increased probability of using rehabilitation services. Stress, financial instability, and social isolation tend to be more prevalent among unemployed people, and it may increase alcohol dependence and its further progress (World Health Organization, 2020). On the other hand, working individuals are likely to exhibit minimal tendency towards addiction to alcoholic beverages, perhaps because of organized schedules and the support system at their places of work. It is however also pointed out that employed people who become dependent on alcohol could have different challenges like having to keep their jobs and at the same time battle their addiction. On the whole, statistics indicate that unemployed people more often attend rehabilitation hospitals than their working colleagues, which is evidence of the role of the occupational status in determining the presence of alcohol addiction and the desire to undergo treatment (William *et al.*, 2020).

4.3 Prevalence of Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres

The findings indicated that the majority 98 (75.4%) of the respondents were at a high risk of relapse while 32 (24.6%) of them had low chances of relapse, (Table 5).

Table 5: Prevalence of Risk of Relapse of Patients Treated for Alcohol Addiction at Selected Rehabilitations in Meru County, Kenya

Variables (n=130)	Frequency	Proportion (%)
Prevalence of risk of relapse		
High risk of relapse	98	75.4
Low risk of relapse	32	24.6

This distribution indicated that a large proportion in this population is at a higher risk of relapse during their initial months after the treatment. The same result correlates with the earlier studies, which pointed out that relapse is a frequent issue among those who have been treated for alcohol dependency, (Nguyen *et al.*, 2020). A study by Hatzenbuehler *et al.*, (2020) concluded that around 50% to 70% of individuals battling alcohol addiction relapse during the course of the initial year of treatment. Relapse rates are quite high despite numerous treatment methods with some people having developed more than one episode of relapse in the past, which highlights that alcohol dependence is a chronic condition. This is contributed by an interplay of various factors. Li *et al.*, (2022) showed that although the strategies aimed at preventing the relapse may lower the chances of subsequent relapse, it does not exclude high-risk stage, especially in the first year after treatment. On the same note, a study by Patel *et al.* (2020) also noted that the relapse rates in sub-Saharan Africa were broadly hovering between 65 and 75% with that proportion showing that most patients were likely to relapse after treatment. The fact that the same results are consistent in various studies indicates that the problem of continuity of long-term abstinence is widespread in resource-poor environments.

There are a number of reasons why the risk of relapse can be so high in the Meru County. The high level of relapse possibility may be explained by certain psychosocial issues which include negative emotions experienced, cravings, low self-efficacy, poor coping skills, and relapse expectations. As an example, persons

overwhelmed with negative moods or high cravings find it very difficult to stay off drinking especially in instances when they have low confidence in their abilities to resist the temptation of drinking alcohol. In addition, these psychosocial vulnerabilities are confounded by environmental risk factors (easy access to alcohol, exposure to social cues that encourage their use, and stressful life events), which also place them at high-risk of relapsing.

Social economic factors to maintain sustainable recovery may involve poverty, lack of job opportunities, and the stigma that surrounds alcohol dependence. These social factors usually decrease the drive and neutralize the continued support mechanisms to relapse prevention. Also, patients in most Kenyan rehabilitation facilities could be exposed when treatment ends in a short time with insufficient follow-ups or aftercare services. The insufficient psychosocial support, such as peer support group and community participation, also serves as an aggravating influence of the risk of relapse. Community culture and how the society looks upon the after-treatment of the alcohol drinking people may also be another trigger of relapse, particularly when the alcohol drinker fails in the acceptance of the society after treatment.

The parallels observed between these findings and the results of other recent studies such as one by Mutua *et al.*, 2020, indicate that, the psychosocial and environmental variables are factors that are universal in terms of their risk of relapse attributable to a variety of settings. The small increased prevalence, though, could be attributed to some systemic problems, including low levels of access to broad-range aftercare services, insufficient community care and support systems, or continued exposure to alcohol related cues in the neighboring environment. In addition, the perceptions of culture that turn alcohol usage into an ordinary or a socially expected case can reinforce the likelihood of a relapse (Karanja *et al.*, 2020). On the contrary, there are studies that show reduced relapse rates which may be attributed to the long-term follow-up, the intensive psychosocial interventions, or community-based interventions that builds resilience (Patel *et al.*, 2020). Variation might also be attributed to the differences in the quality of treatment, its duration, and support after the treatment, which is usually frustrated in such resource-poor settings as Meru County.

As an illustration, Mwangi *et al.* (2022) proved that community-based relapse prevention programs enhanced the recovery results of the patients in Kenya in a significant manner, creating evidence of the applicability of the strategies in the county of Meru. Coincidentally, the key informants revealed that the rates of relapse were notably high in the selected rehabilitation centres especially since Covid 19. The clinicians reported that among the patients treated in the respective facilities, the alcohol addiction were the majority and this also led to the high relapse rates. Most relapse rates were said to be observed towards the end of year and beginning of the year when Meru culture experiences many tradition occasions such passage of rite and traditional alcohol is drunk.

“Ever since we experienced the Covid-19, the records of relapse particularly for our patients who were treated for alcohol addiction went to arise. Comparing 2018 where we had a 60% relapse rate and 2022 where we registered a 92% among the said patients. “(P1)

4.4 Psychosocial Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres

The study examined the psychosocial variables that are associated with risk of relapse in patients that had been treated for alcohol addiction at selected rehabilitation centres within Meru County. The urge to drink alcohol, one of the variables, revealed that a majority of 68 respondents (52.3%) reported ever feeling an urge to drink, since their discharge from the treatment. A proportion of 26 respondents (20.0%) reported that they often felt the urge to drink alcohol. Those who reported that they sometimes experienced urge to drink were 19 (14.6%) while 9 patients (6.9%) reported to rarely experience the urge to drink while 8 respondents which is 6.2% said they never experienced, (Table 6).

Table 6: Descriptive Statistic for the Psychosocial Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres

Variable (n =130)	Frequency	Proportion (%)
The experience of urge to drink alcohol since discharge		
Never	8	6.2
Rarely	9	6.9
Sometimes	19	14.6
Often	26	20
Always	68	52.3
The experience of low mood, hopelessness and feeling depressed		
Never	36	27.7
Rarely	27	20.8
Sometimes	25	19.2
Often	9	6.9
Always	33	25.4
Confidence in ability to resist the urge to drink alcohol		
Not at all confident	49	37.7
Slightly	35	26.9
Moderately	18	13.8
Considerably	17	13.1
Extremely	11	8.5
The expectation of experiencing a relapse in the next six months after discharge based on the patient's abilities and coping mechanisms		
Very unlikely	16	12.3
Unlikely	34	26.2
Neutral	39	30
Likely	27	20.8
Very Likely	14	10.7
The attendance of Alcohol Anonymous Program as a healthy coping mechanism recommended		
Never	87	66.9
Rarely	16	12.3
Sometimes	10	7.7
Often	9	6.9
Always	8	6.2
How often one thinks of himself or herself relapsing		
Never	15	11.5
Rarely	11	8.5
Sometimes	18	13.8
Often	40	30.8
Always	46	35.4

The emotional well-being of the patients was also assessed including their experience with negative emotions particularly the feelings of low mood, hopelessness and feeling depressed. Most of the respondents, 33 participants (25.4%) reported to have constantly experienced low mood, depressed and hopelessness. There were 36 respondents (27.7%) who reported to never experience such emotions while 27 respondents (20.8%) rarely experienced them. A total of 25 respondents (19.2%) shared that they sometimes experienced the negative feelings. A small percentage of 9 (6.9%), said that they often experienced these emotions, (Table 6).

Participants were of varying confidence levels in their abilities to resist the urges to drink alcohol experienced after discharge. For instance, 49 (37.7%) of them reported that they were not confident at all in their abilities, 35 respondents (26.9%) were slightly confident and 18 respondents (13.8%) were moderately confident. Some said they were quite confident who consisted of 17 respondents (13.1%), while those who were extremely confident to resist the urges were 11 respondents (8.5%), (Table 6).

The likelihood of the participants to experience relapse in the next six months after leaving rehabilitation centres by thinking about it were rather different. Most participants were neutral in their relapse expectancy, with 39 (30%) of the respondents neither likely nor unlikely to relapse. A large percentage of them believed that relapse had a low chance of happening and included 34 participants (26.2%) and 27 participants (20.8%) felt that it was possible. On the other hand, a very low percentage of the respondents felt that relapse was highly unlikely, representing 16 (12.3%) participants, and the lowest percent estimate was made on those who felt that relapse was highly likely with 14 (10.7%) participants, (Table 6). These results indicated that patients have different views on whether their relapse is likely or not after treatment due to the range of psychosocial vulnerability and their sobriety optimism.

Low attendance rates at Alcoholic Anonymous (AA) sessions were in the majority among the participants. A very large proportion of respondents 87(66.9%) said they had never participated in AA. The percentage of those who attended rarely were 16 (12.3%), those who attended sometimes were 10 participants (7.7%) and the others who attended often were 9 (6.9%) participants. A low proportion of respondents, 8

(6.2%), responded that they regularly attended AA meetings, (Table 6). These results imply that there is little attendance to AA support groups among this group, which may affect their level of relapse and recovery.

The rate of those participants considering their relapse for the next six months after their discharge from treatment was significantly different. Some of the respondents 15 (11.5%) said that they never considered relapsing. The respondents who did not think about relapse a lot were 11 (8.5%), and some respondents thought occasionally about relapse, being 18 (13.8%). A greater percentage, 40 individuals (30.8%) reported thinking about relapsing most of the time, and the greatest percentage of 46 participants (35.4%) thought of relapsing all the time, (Table 6). These results revealed that a large percentage of patients regularly had thoughts of relapsing, pointing to the continuous psychological issues during the healing process.

From the key informant interview, it was reported that despite the patients having the Minnesota Model of treatment which includes the twelve-step program, majority of them fail to continue with the recommended practice of attending the Alcoholic Anonymous. This highly leads to them to relapse amidst many other factors. It was also found out that a good number of patients treated for alcohol addiction do struggle with urge to drink even after treatment. This is said to be possible because of the triggers they encounter in form of people, places, situations and things.

“It is so unfortunate that despite we as clinicians trying to take the patients treated for alcohol addiction through the twelve steps of Alcoholic Anonymous and encouraging them to continue attending to such, majority still fail to adhere. We actually use the Minnesota Model of Treatment as we have found it to be effective but many treated patients give reasons of not attending the support programs. They claim to begin and lack the discipline of continuing.” (P4)

4.4.1 A Chi Square Test of Association between Psychosocial Factors and Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County

There were a number of revealing insights concerning the nature of the relationship between the psychosocial factors and the risk of relapse among patients who were

treated for alcohol addiction in Meru County. The desire to drink alcohol post-discharge was significantly related to relapse ($\chi^2 = 15.115$, $df = 4$, $p = 0.004$) and therefore, people with higher or more frequent urges were at the risk of returning to drinking alcohol. The participants who witnessed the feelings of low mood, depression, and hopelessness were characterized by a significant association with relapse as well ($\chi^2 = 9.692$, $df = 4$, $p = 0.046$), (Table 7).

These moods can be a deterrent to motivation and perseverance, and this can lead relapse as well. On the other hand, the level of self-efficacy as perceived by the participants regarding their skills of resisting the urges to drink alcohol did not indicate a statistically significant association with relapse ($\chi^2 = 5.884$, $df = 4$, $p = 0.208$), (Table 7). This indicates that self-efficacy alone is not likely to assist in relapse prevention unless underpinned by more substantial assistance.

The expectation of a relapse in the six months after getting discharged was also not significantly related ($\chi^2 = 3.469$, $df = 4$, $p = 0.483$), (Table 7), and thus the anticipation beliefs about relapse may not always have a significant relation with actual relapse not occurring in this sample. The number of Alcohol Anonymous meetings that they attended was marginally related to relapse outcomes ($\chi^2 = 7.913$, $df = 4$, $p = 0.095$), (Table 7). Because this p-value is greater than the standard threshold of 0.05, it was thus not statistically significant. It was also noted from the key informants that majority of the patients who relapsed and those who were at high risk of relapse did not attend to the Alcohol Anonymous programs as recommended during discharge. Also, a borderline relationship was found to exist between thoughts of oneself relapsing and risk of relapse ($\chi^2 = 8.209$, $df = 4$, $p = 0.084$), (Table 7), which failed to achieve the statistical significance test.

Table 7: A Chi-square Test of Association between Psychosocial Factors and Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County, Kenya 2025

Variable (n=130)	χ^2 Value	df	p-value
The experience of urge to drink alcohol since discharge			
Never	15.115	4	0.004
Rarely			
Sometimes			
Often			
Always			
The experience of low mood, hopelessness and feeling depressed			
Never	9.692	4	0.046
Rarely			
Sometimes			
Often			
Always			
Confidence in ability to resist the urge to drink alcohol			
Not at all confidence	5.884	4	0.208
Slightly			
Moderately			
Considerably			
Extremely			
The expectation of experiencing a relapse in the next six months after discharge based on one's abilities and coping mechanisms			
Very unlikely	3.469	4	0.483
Unlikely			
Neutral			
Likely			
Very likely			
The attendance of Alcoholic Anonymous program as a healthy coping mechanism			
Never	7.913	4	0.095
Rarely			
Sometimes			
Often			
Always			
How often one thinks of himself or herself relapsing			
Never	8.209	4	0.084
Rarely			
Sometimes			
Often			
Always			

4.4.2 Multivariate Logistic Regression for Psychosocial Factors Associated with Risk of Relapse

In order to better determine the independent psychosocial factors that are related to the risk of relapse among patients treated for alcohol addiction, multivariate analysis was carried out using binary logistic regression. To conduct this analysis, the initial chi-square tests results were used to identify those variables whose p-value were ≤ 0.3 to ensure only the variables that are crucial to the analysis in the model were used. The results of these variables were as reported below in the format of Adjusted odds ratio, P value and degree of freedom.

The multivariate analysis indicated a number of noteworthy associations. On the urge to drink, those who did not have any urge produced a significantly lower adjusted odds ratio (AOR = 0.120; 95% CI: 0.017-0.848; $p=0.033$), thus, indicating the reduced risk of relapse. For those who rarely experienced had protective effect to a very different extent (AOR=0.133; 95% CI: 0.020-0.885; $p=0.037$). Conversely, those who sometimes had an urge to drink alcohol had a high risk (AOR= 2.326, 95% CI: 0.188-28.801, $p=0.511$) as does those respondents who had an urge to do so frequently (AOR= 0.943, 95% CI: 0.216-4.115, $p=0.511$), (Table 8).

Regarding the low mood, hopelessness and depression experiences, there was a lower risk of relapse as recorded by those who never experienced it (AOR=0.149, CI: 0.010 - 2.820, $p=0.036$). The result was that very low frequency of such feelings also posed a significantly reduced likelihood (AOR=0.044, CI: 0.011- 48.223, $p=0.012$), as did feelings sometimes experienced (AOR=0.148, CI: 0.031- 0.703, $p=0.016$). There was no statistically significant value between the patients feeling low mood always and those who had low mood only (AOR=0.460, CI: 0.141- 1.503, $p=0.199$), (Table 8).

The level of confidence in the capacity to resist alcohol did not produce any significant results as all the categories had p-values of over 0.05. Likewise, attending the Alcoholics Anonymous (AA) sessions were not found to have any statistically significant association, but the few attendees were at a higher risk (AOR=5.809; $p=0.099$).

Lastly, frequency of patients thinking about relapsing was also correlated considerably with risk of relapse. Those who did not think of relapsing were at a very minimal, although not significant, risk of relapsing (AOR=0.007; $p=0.072$) and those who did not think much of relapsing displayed a significant drop of risk (AOR=0.005; $p=0.040$). Reductions in risk relating to the participants who frequently contemplated about the relapsing were also found but with reduced effect that was close to being significant (AOR=0.022; $p=0.047$), (Table 8).

Table 8: Multivariate Logistic Regression for Psychosocial Factors Associated with Risk of Relapse

Variable (n=130)	AOR	CI	p-value
The experience of urge to drink alcohol since discharge			
Never	0.120	0.017 -0.848	0.004
Rarely	0.133	0.020- 0.885	0.037
Sometimes	2.326	0.188 -28.885	0.511
Often	0.943	0.216 - 4.115	0.938
Always	0		
The experience of low mood, hopelessness and feeling depressed			
Never	0.149	0.010 -2.820	0.036
Rarely	0.044	0.011 – 4.123	0.012
Sometimes	0.148	0.031- 0.703	0.016
Often	0.460	0.141 -1.503	0.199
Always	0		
Confidence in ability to resist the urge to drink alcohol			
Not at all confidence	0.973	0.077 – 12.349	0.983
Slightly	1.943	0.132 -28.505	0.628
Moderately	5.888	0.184 – 38.583	0.316
Considerably	0.334	0.021 -5.216	0.434
Extremely	0		
The attendance of Alcoholic Anonymous program as a healthy coping mechanism			
Never	2.100	0.173 – 25.508	0.560
Rarely	5.809	0.716 – 47.122	0.099
Sometimes	4.470	0.57 – 33.471	0.145
Often	2.955	0.412 – 21.215	0.281
Always	0		
How often one thinks of himself or herself relapsing			
Never	0.007	0.026 – 1.002	0.072
Rarely	0.005	0.019 – 0.782	0.040
Sometimes	0.839	0.081 – 3.855	0.925
Often	0.022	0.129 – 2.085	0.047
Always	0		

The multivariate analysis revealed three psychosocial determinants of risk of relapse as per the sample used in this study. The patients who never or hardly ever get urges to drink have fewer chances of getting a relapse as compared to those who experience urges on a regular or occasion basis. It can be concluded that the existence of urges is one of the best predictors of the relapse possibilities as more frequent the urges more probable is the relapse. Johnson *et al.* (2021) report that the craving level significantly impacts the relapse by suggesting that individuals with lower levels of craving have a longer abstinence time. As Smith *et al.* (2020) have noted, craving and urges are very important indicators of relapse, and cognitive-behavioral approaches to controlling urges could significantly decrease the rates of relapse. Patients with frequent urges will fail to control their impulses or will fail to implement carefully placed coping strategies making less susceptible to relapse. On the other hand, the urge to consume alcohol may be a frequent occurrence and could be due to psychological trigger, or environmental triggers that make one more likely to engage in alcohol consumption. The craving is associated with an impairment of brain reward systems composing of the mesolimbic dopamine pathway that strengthens alcohol seeking behaviors. At the point when the levels of craving are high, the activity in these circuits is intensified which subsequently enhances the possibility of the relapse.

Chronic alcohol exposure leads to neuroadaptations of these reward pathways in the brain that make one more prone to cues and urges (Koob & Volkow, 2020). The relapse thoughts are linked to the prefrontal cortex which keeps control and decides on the impulses. When people engage in rumination about the prospect of relapse, there is the possibility that this can stimulate neural circuits that enhance cravings and decrease self-control and thus becomes a factor that can increase the risk of relapse. Results of neuroimaging data indicate that front-cortical malfunction is associated with poor inhibition and elevated craving of drugs in individuals with AUD (Li *et al.*, 2021).

In this study's sample, patients who had never or seldom got these negative emotional conditions indicated that they were much less likely to relapse which shows how important emotional health is in long-term recovery. Improving relapse prevention plans may hence be achieved by addressing mental health problems and offering psychological help to overcome depression and hopelessness. Lee *et al.* (2022),

reported that mood states are multidimensional parameters in the context of addiction healing, where part of the evidence has shown that mild or short-lived depression symptoms can serve as a driving impetus of inducing behavioral shift whereas acute or persistent depression is a risk factor of relapse. The neurotransmitters that are affected during mood states especially depression include serotonin, norepinephrine and the dopamine neurotransmitters.

The thoughts of relapsing also emanated as a strong determinant whereby the respondents who rarely or never thought about relapse were less inclined towards it. This validates cognitive-behavioral hypotheses of addiction, where cognitive or thoughts instigates craving and ensuing substance use. Xi *et al.* (2021) verifies that people who worry about a relapse experience a higher relapse rate, and cognitive behaviors that focus on decreasing them can be effective. The results show that patients who almost never think about either relapsing or not relapsing are the least likely to actual relapse, which implies that the cognitive preoccupation with the relapse is a high predictor. Similarly, McHugh *et al.* (2020), which attested that concerning preoccupation with relapse involves one in consideration as a warning sign and predictor of actual relapse, as symptoms are merely thoughts that indicate vulnerability and cravings because of the ruminative thought style. On the other hand, people who rarely consider relapse are more likely to improve their cognitive and emotional resilience, thus preventing the chances of relapse to alcohol use.

4.5 Environmental Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres

The respondents were assessed on their frequency of interaction with their old friends who used to drink together. The highest frequency was observed among 40 participants (30.8%) who reported to have always interacted with old friends whom they used to drink with previously. A proportion of 31 respondents (23.8%) reported to have often interacted with old drinking friends while 28 (21.5%) participants indicated they sometimes interacted with these friends, (Table 9).

Table 9: Environmental Factors Associated with Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres

Variable (n=130)	Frequency	Proportion (%)
Interaction with old friends whom you used to drink alcohol with		
Never	17	13.1
Rarely	14	10.8
Sometimes	28	21.5
Often	31	23.8
Always	40	30.8
Living with anyone who drinks alcohol		
Yes	81	62.3
No	49	37.7
How supportive the friends and family have been		
Not at all	45	34.6
Slightly	22	16.9
Moderately	23	17.7
Considerably	22	16.9
Extremely	18	13.9
The access to alcohol in case the patient wanted to		
Very difficult	16	12.3
Difficult access	10	7.7
Easy access	48	36.9
Very easy access	56	43.1
The exposure to situations and circumstances such as conflicts or moments of boredomness and loneliness		
Never	36	27.7
Rarely	14	10.7
Sometimes	17	13
Often	21	16.3
Always	42	32.3
The experience of a major life stressor such as loss of a job, loss of a loved one etc		
Never	42	9.2
Rarely	5	3.8
Sometimes	34	26.2
Often	50	38.5
Always	29	22.3

Among the participants, 17 respondents (13.1%) reported never engaging with old drinking friends, while 14 participants (10.8%) rarely interacted with old drinking

friends, (Table 9). This suggests that frequent social interaction with old drinking friends is common in the study population and may influence the risk of relapse. In the case of their living arrangements, 81 (62.3%) participants reported living with someone who drinks alcohol, while 49 (37.7%) lived without anyone who consumes alcohol, (Table 9). This indicates that the majority of respondents are in an environment where alcohol consumption is present in their household, potentially posing a challenge to maintaining sobriety.

Support from friends and family varied notably across the sample. A significant portion, 45 (34.6%) respondents, reported receiving no support at all, whereas 23 (17.7%) received moderate support, and another 22 (16.9%) experienced slight support. Considerable support was reported by 22 (16.9%) participants while 18 (13.9%) indicated they received extremely supportive assistance, (Table 9). This distribution highlights that many individuals perceive limited support from their social networks, which could impact their recovery process.

Access to alcohol was another critical environmental factor. The highest proportion, 56 (43.1%) participants, reported very easy access to alcohol while 48 (36.9%) participants reported easy access. A total of 16 (12.3%) participants indicated very difficult access to alcohol, whereas 10 (7.7%) found access difficult, (Table 9). The samples' data suggested that most participants had relatively easy or very easy access to alcohol, which could increase the risk of relapse.

Exposure to stressful situations such as conflicts, boredom and loneliness was also common. The highest frequency was observed in those who always faced conflicts, with 42 participants (32.3%). Among respondents, 36 (27.7%) never experienced such situations, while 21 (16.2%) participants reported often experiencing such circumstances. Sometimes, 17 (13%) participants encountered conflicts, whereas 14 (10.7%) were rarely exposed to situations and circumstances such as conflicts, boredom and loneliness, (Table 9). This indicated that exposure to stressful and situations related to conflict were frequent and could serve as a trigger for relapse.

Finally, life stressors were reported to be a significant experience for many. Conversely, 50 (38.5%) often encountered stressful situations, 34 (26.2%) participants faced stress sometimes, and 29 (22.3%) reported experiencing stress always. A total of 12 participants (9.2%) reported never experiencing stressors, while 5 (3.8%) rarely experienced them, (Table 9). The high prevalence of life stressors among participants underscores their potential role in influencing relapse behaviors.

The key informant interview revealed that many of the patients still interacted with their old friends whom they used to drink alcohol with. This was possibly led by lack of support from their guardians as well as the patients failing to practice assertiveness. They were said to be easily lured by their old friends. Those who received support from their loved ones were said to be a lower risk of relapse and were able to maintain sobriety.

Another factor that came so strongly as a factor contributing to the high rates of risk of relapse from the key informant interview was the accessibility of alcohol. It was found out that the easy access of alcohol in supermarkets, many bars and restaurants within residence areas, cheap alcohol contributed to risk of relapse of patients.

4.5.1 A Chi-square Test of Association between Environmental Factors and Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County

In the investigation of environmental factors related to risk of relapse among patients treated for alcohol addiction in Meru County, the chi-square test revealed several factors that had a significant association.

Notably, contact with friends who used to drink alcohol was strongly associated to the risk of relapse ($\chi^2 = 10.138$, $df = 4$, $p = 0.038$). This indicates that keeping social ties with persons with a similar background in drinking history could be the trigger of relapse, which possibly might be because of peer influence and connecting drinking to the social reinforcement of drinking habits. Also, being around people who drink was discovered to have a strong correlation with relapse ($\chi^2 = 4.522$, $df = 1$, $p = 0.033$). This is an indication of the effects of the immediate living environment and of the significance of an alcohol-free home environment in support of a long-term recovery.

Social support networks also emerged as an important variable, ($\chi^2 = 9.627$, $df=4$, $p = 0.047$), so the existence of friends and family is also essential in managing relapse, (Table 10).

Table 10: A Chi-square Test of Association between Environmental Factors and Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County, Kenya 2025

Variable (n =130)	χ^2 Value	df	<i>p-value</i>
Interaction with old friends whom you used to drink alcohol with			
Never	10.138	4	0.038
Rarely			
Sometimes			
Often			
Always			
Living with those who drink alcohol			
Yes	4.522	1	0.033
No			
How supportive the friends and family have been in ensuring sobriety			
Not at all	9.627	4	0.047
Slightly			
Moderately			
Considerably			
Extremely			
The access to alcohol in case the patients wanted			
Very difficult access	8.323	3	0.040
Difficult access			
Ease access			
Very easy access			
The exposure to situations and circumstances such as conflicts or moments of boredomness and loneliness			
Never	7.772	4	0.100
Rarely			
Sometimes			
Often			
Always			
The experience of a major life stressor such as loss of a job, loss of a loved one etc			
Never	4.876	4	0.300
Rarely			
Sometimes			
Often			

Those patients who described having very supportive systems had less relapses which reinstates the need to have emotional and psychological support during the recovery process. Another environmental factor that was significantly correlated with a relapse was access to alcohol ($\chi^2 = 8.323$, $df=3$, $p= 0.040$) pointing to the fact that easy access to alcohol could be one of the major risk factors of relapse, (Table 10). On the other hand, the exposure to situations or circumstances such as conflicts, loneliness, boredomness ($p=0.100$) and experience of life stressors ($p=0.300$) were not significantly connected with the relapse, which means that despite their potential contribution to relapse, the explanatory value of these factors was not significant, in this case. All these findings in general show a complex picture of the influence of environment on risk of relapse.

4.5.2 Multivariate Logistic Regression for Environmental Factors Associated with Risk of Relapse

Parameters recorded on the bivariate analysis were entered into multivariate logistic regression model to identify independent relationships associated with relapse among the patients treated of alcohol addiction with a p- value of 0.03 or less. The relationships were measured using adjusted odds ratios (AORs) with the 95 % confidence interval (CI).

A risk factor such as frequency of interaction with patients who used to drink the alcohol previously was assessed. The group that never engaged with former alcohol drinkers had an AOR of 5.694 (95% CI: 0.067-74.122; $p=0.241$) which means that there was no significant increased risk of relapse. Participants who hardly interacted had an AOR of 0.020 (95% CI: 0.001 - 2.180; $p=0.102$) meaning that it was also not statistically significant. The sometimes segment and often interaction categories also had an AOR of 1.258 (CI: 0.087 - 18.171) and 2.123 (CI: 0.128 - 35.199) which were neither statistically significant. Living with alcohol users was associated with the risk of developing relapse with an AOR of 1.033 (95% CI: 0.002-0.518; $p=0.015$). This implied that living with drinkers is a factor that predisposes a recovering addict as it was found to be statistically significant. The availability of alcohol was classified as very difficult, difficult and easy. The AOR of those having easy access was 1.443

(95% CI: 0.126 - 14.555; $p=0.032$), which implied that an easy access of alcohol is proven to significantly increase relapse risk. On the other hand, difficult access had an AOR = 0.136 (95% CI: 0.019 - 0.960; $p = 0.045$). The participants who felt that access was quite difficult had an AOR value of 1.988 (95 % CI 0.274 - 14.422; $p=0.143$) and this value was not statistically significant.

Family support was not found to have a significant independent relationship with relapse. Participants who did not receive support had an AOR of 0.383 (95% CI: 0.062 - 2.360; $p=0.301$), and a slight support had an AOR of 0.613 (95% CI: 0.074 - 5.133; $p=0.651$), (Table 11). Both of these categories were not statistically significant.

In respect of exposure to conflicts the participants who reported suffering conflicts sometimes had an AOR of 5.704 (95% CI: 0.077 - 24.970; $p=0.428$) and those who reported suffering conflicts often had an AOR of 0.011 (95% CI: 0.001 - 0.396; $p=0.880$), (Table 11). Such findings show no major impact of conflict exposure as an independent factor in relapse. In the same way, on a life stress, those who sometimes had an AOR of 2.511 (95% CI: 0.571 - 11.045; $p=0.223$) and those who reported that they experienced it often had an AOR of 0.909 (95% CI: 0.266 - 3.115; $p=0.880$), (Table 11). These results are inconclusive that there is no statistically significant association between life stressors and relapse risk when the same is adjusted.

Conclusively, multivariate analysis was used to find out that living with people who consume alcohol and poor access to alcohol are important independent predictors of relapse in alcohol addicted patients who have been treated. The other aspects of the environment were not statistically significantly associated given that there were control aspects on them. These results help to highlight the issue of environments, namely, decreased alcohol availability and control of living with drinkers, as a means of improving relapse prevention measures.

Table 11: Logistic Regression for Environmental Factors Associated with Risk of Relapse

Variable (n =130)	AOR	95% CI	<i>p-value</i>
Interaction with old friends whom you used to drink alcohol with			
Never	5.694	0.067 – 74.122	0.241
Rarely	0.020	0.001 – 2.180	0.102
Sometimes	1.258	0.087 – 18.171	0.866
Often	2.123	0.128 – 35.199	0.599
Always			
Living with anyone who drinks alcohol			
Yes	1.033	0.002 – 0.518	0.015
No			
How supportive the friends and family have been in ensuring sobriety			
Not at all	0.383	0.062 – 2.360	0.301
Slightly	0.613	0.074 – 5.133	0.651
Moderately	1.951	0.223 – 17.038	0.546
Considerably	2.266	0.218 – 24.510	0.501
Extremely			
The access to alcohol in case the patient wanted			
Very difficult access	1.988	0.274 – 14.422	0.143
Difficult access	0.136	0.019 – 0.960	0.45
Easy access	1.443	0.126 – 1.555	0.032
Very easy access			
The exposure to situations and circumstances such as conflicts or moments of boredomness and loneliness			
Never	0.875	0.053 – 14.533	0.926
Rarely	0.073	0.001 – 9.521	0.293
Sometimes	5.704	0.077 – 24.970	0.428
Often	0.022	0.129 – 2.05	0.011
Always			
The experience of a major life stressor such as loss of a job, loss of a loved one etc			
Never	0.430	0.074 – 2.514	0.349
Rarely	0.584	0.091 – 3.766	0.572

Sometimes	0.511	0.571 – 11.045	0.223
Often	0.909	0.266 – 3.115	0.800
Always			

Two elements of the environment were found to be significant by the multivariate analysis in the study as the independent predictors of relapse of a patient treated according to the alcohol dependence: living with people who also drink and having easy access to alcohol. The above findings are in agreement with literature depicting the essential role that environmental and social situations play in the risk of relapse.

Patients who lived with individuals who took alcohol were associated with a somewhat higher risk of relapse (AOR=1.033; p=0.015). This corroborates the idea that social surroundings and peer pressure play a very imperative role in abstinence sustainability. Co-inhabitation with an active drinker can be a continuous reminder and stimulus that acts towards sabotaging the recovery process by legitimizing the drinking culture and availing easy access to slide back to drinking (Kairuz *et al.*, 2020). Similar results were discussed by Smith *et al.* (2021) who revealed that social networks have a severe impact and cohabitation with drinkers puts a person at high risk of relapse.

Accessibility of alcohol came out as a major factor, as easy availability was shown to contribute greatly to the danger of a relapse (AOR=1.443; p=0.032). Alcohol restriction has also been linked to abstinence through curbing impulsivity in consuming alcohol and reducing the environmental factors that increase drinking (Liu *et al.*, 2020). In contrast, a setting with considerable access to alcohol can act as the same continuous temptation especially when one is stressed or is craving to some extent and therefore increases the risk of a relapse. These results support the previous studies showing that the environmental control interventions such as limiting the access to alcohol can be effective at preventing relapse (Johnson *et al.*, 2020).

The impact of these environmental issues indicates the importance of the context-related interventions of bases of short-term addiction treatment. The implication of the effect of the social environment would therefore imply that relapse prevention needs to be carried out beyond the individual level to the family and community level.

Unrestricted access to alcohol and the establishment of an effective social support system can provide a better opportunity to be permanently recovered.

Environmental triggers such as living with someone who takes alcohol and having opportunities to access it tend to boost the risk of having cravings and triggers which are listed as precipitating causes of the relapse (National Institute on Alcohol Abuse and Alcoholism, 2020). Normally, these predictors will promote learned responses which come before the coping strategies that were learned during the treatment. According to a systematic review by Chen *et al.* (2022), factors that are essential to relapse prevention are social support, environmental control. They stated that abstinence rates in the long-term are much higher when the focus of interventions is placed in environmental modifications such as social networks and alcohol availability. Also, a cohort study conducted by Wang *et al.* (2021) concluded that the higher relapse rates occurred in people who were exposed to high-alcohol density environments, suggesting that the environmental changes should take place.

Summing up, the key role of environment-related factors, namely, co-habitation with persons inclined to the consumption of alcohol and availability of alcohol at ease is identified as the factors connected to the risk of relapse. These observations indicate that environmental and social interventions should be considered in relapse prevention programs in order to improve the results of a treatment. There is a need in the future to study the effectiveness of these approaches in various contexts to guide policy and practice.

From the key informants, it was found out that many patients who relapsed also had struggled with cravings and had easy access of alcohol, some noting that they easily got it from their family members whom they live with.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The purpose of this study was to determine the factors that are associated with risk of relapse among the patients treated for alcohol addiction in selected rehabilitation centres withing Meru County. It focused on assessing the prevalence of risk of relapse, determining psychosocial and environmental factors associated with risk of relapse.

The demographic characteristics results revealed that most of the participants fell between 20 and 34 years of age, which implied that young adults represented a large group of individuals treated for alcohol addiction in the selected rehabilitations in Meru County. The distribution of sex indicated that males were in the dominant majority of the sample that have been described in existing literature sources with a higher frequency of alcohol use disorder prevalence in men. Majority of participants were single, having never been married and most participants had received secondary education. Employment status revealed that most of the participants had no jobs, and this factor had the potential to affect the likelihood of developing relapse, with the due social-economic concerns.

In the prevalence of risk of relapse, findings of this study revealed that the proportion of patients treated for alcohol addiction who were at high risk of relapse were 98 (75.4%) while those at a low risk of relapse were 32 (24.6%) out of 130 patients who participated. This indicates an overwhelming number of patients at a high risk, and creates a necessity to develop specific intervention plans.

Among the psychosocial factors were identified in this research, a number of variables were investigated. Most of these factors revealed high trends of influence however they were found not to be statistically significant which means that the effects they imbibe are rather subtle or may be confounded by other variables. Three factors were identified as psychosocial determinants as they were found to be statistically significant in comparison to other variables. These include the urge to drink alcohol, thinking of relapsing, feelings of low mood, loneliness and feeling depressed.

On a similar note, the environmental factors were also examined and the results showed that trends were also high, but the only factors that were found to be statistically significance upon adjusting odds ratios were access to alcohol and living with those who drink alcohol. Such a discovery underscores the serious need to limit the access to alcohol in the environmental sphere as an aspect of relapse prevention as well as change of environment for those who live with alcohol users.

On the whole, the findings indicate that cravings, negative emotions, relapse expectation, social context and alcohol availability are the main determinants of the risk of relapse in the sample of study, and they are important in the development of relapse prevention strategies. The high prevalence of patients in relation to risk of relapse necessitate patient-specific interventions aimed at their psychological and emotional improvement as well as management of environmental triggers.

5.2 Conclusion

In conclusion, this study clearly revealed high risk of relapse among the patient treated for alcohol, addiction based on the results. This was found to be contributed by several factors including the psychosocial and environmental factors assessed which underlines the necessity of the introduction of special intervention measures.

The results revealed three main psychosocial factors as determinants of risk of relapse among the respondents. This included the urge to drink alcohol, thinking about relapse and experiencing feelings of low mood, hopelessness and feeling depressed. The environmental factors identified as key determinants of risk of relapse among the respondents in this research included ease access to alcohol and living with individuals who use alcohol.

In the future, these results suggest the use of integrated models to enhance management of negative emotions, cravings, thought of relapsing and management of environmental risk factors to eventually lower incidence rates of relapse and enhance longer term outcomes of recovery.

5.3 Recommendations

Based on the results obtained, the following are recommended;

- i. Healthcare providers and policymakers need to focus on implementing strategies that are likely to reduce the high prevalence revealed in the current study. There can be specific counseling techniques, motivational interviews, and skills which may be individual specific.
- ii. In the case of Meru County, there is a need to pay close attention on revealed psychosocial factors and put more emphasis on them as well as psycho-educate the patients on what skills to apply in order to deal with them such as how to deal with cravings and negative emotions.
- iii. To minimize the environmental risk factors as well, emphasis should be made on environmental control measures like the control of access to alcohol in various communities and the enforcement of policies that have been proven to limit access to alcohol.
- iv. Environmental awareness is a module that should be included in the rehabilitation centers and support groups as well as good exit plans for the patients that align with their needs and abilities. A well, structured and planned follow up would be helpful in ensuring long term recovery and reduction of relapse cases.

5.4 Suggestions for further research

- i. A study on a longitudinal design (tracking patients to arrange a prolonged period of time) would inform the effects of negative affect, cravings, relapse expectations and environmental factors affecting the relapses over time.
- ii. Intervention-based studies of the effectiveness of certain programs that limit environmental access to alcohol can be carried out to obtain evidence-based methods of dealing with relapse.
- iii. A replication of the study with the populations that vary demographically and geographically can identify the generalizability of the results and consider them to treat interventions.
- iv. In future, the effect on the relapse and recovery of other mental disorders or physical illnesses may be studied.

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APPENDICES

Appendix 1: Consent Form

I am Kisomo Mary Syombua, a postgraduate student at Chuka University pursuing a Master's degree in Clinical Psychology. I am carrying out an academic research study on; **Determinants of risk of relapse among patients treated for alcohol addiction at selected Rehabilitation Centres in Meru County, Kenya**. This is for partial fulfilment of my masters in Clinical Psychology and having acquired all the necessary permission from the required bodies such as NACOSTI and Meru County government. The findings of this study will enhance understanding of factors that influence relapse in alcohol addiction. This will have academic benefit as it will add to the body of knowledge existing. The findings of this study will also bring beneficial changes to the target audience as well as their families because improvement in treatment methods or techniques will yield long term recovery and reduce relapse cases. The findings are also helpful to the clinicians in this field and mental health sector in the country. This study's findings will create essential implications which could influence Kenyan national policies and frameworks related to drug addiction treatment thus promoting long lasting recovery after treatment. This will benefit the recovering patients and their families.

Your identity as a respondent will remain anonymous and will not be disclosed to anyone and this assures your confidentiality to all that you share. In order to participate in this study, your consent is kindly requested. Your data will be kept safely for the purpose of meeting the objectives of this study. The questionnaire takes around 15 minutes and you are allowed to withdraw before and during the in case you feel uncomfortable to continue.

For any questions or clarifications, kindly reach out via;

Kisomo Mary Syombua

0712224107

kisomomary@gmail.com

or

Dr. Cornellius Muendo

0726238582

cmuendo@chuka.ac.ke

I have read and understood the nature of this study, its purpose and that my information will be kept confidential. I have understood that I can withdraw from the study anytime. I therefore willingly agree to take part in the study and promise to give truthful information.

Signature _____

Date _____ / _____ / _____

Witness _____

Signature _____

For those who cannot sign, put a thumb print in the box below.



Appendix 2: Semi Structured Questionnaire

Thank you for accepting to undertake this Questionnaire. Please fill the blank or choose the most appropriate response. Your honest responses are appreciated.

SECTION A: Demographic Information

1. Which year where you born?

2. What is your sex?

[a]. Male ☐

[b]. Female ☐

[c]. Others (Clarify) ☐

3. What is your current marital status?

[a]. Married ☐

[b]. Single, never married ☐

[c]. Separated ☐

[d]. Divorced ☐

[e]. Cohabiting ☐

4. What is your highest level of education?

[a]. None ☐

[b]. Primary ☐

[c]. Secondary ☐

[d]. Tertiary ☐

5. What is your occupation?

[a]. Formally Employed ☐

[b]. Self employed ☐

[c]. Unemployed ☐

[d]. Others (Specify) _____

SECTION B: Psychosocial Factors (choose the most appropriate response)

1. How often have you experienced any urge to drink alcohol since you were discharged from the rehabilitation centre?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

☐

[e]. Always

2. Since your discharge from treatment, how often have you experienced or felt of low mood, depressed or hopeless?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

3. How confident are you in your ability to resist the urge to drink alcohol?

[a]. Not at all confident ☐

[b]. Slightly ☐

[c]. Moderately ☐

[d]. Considerately ☐

[e]. Extremely ☐

4. How likely did you think you will experience a relapse in the next six months based on your abilities and coping mechanism?

[a]. Very unlikely ☐

[b]. Unlikely ☐

[c]. Neutral ☐

[d]. Likely ☐

[e]. Very likely ☐

5. How often have you been attending Alcohol Anonymous program as a healthy coping mechanism as trained during treatment?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

6. Do you think about yourself relapsing?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

SECTION C: Environmental Factors

7. Since you were discharged, how often have you interacted with your old friends whom you used to abuse drugs with?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

8. Do you live with anyone who drinks alcohol?

[a]. Yes ☐

[b]. No ☐

9. How supportive have been your friends and family since you were discharged?

[a]. Not at all ☐

[b]. Slightly ☐

[c]. Moderately ☐

[d]. Considerately ☐

[e]. Extremely ☐

10. How easy is it to access alcohol in case you wanted to?

[a]. Very difficult ☐

[b]. Difficult to access ☐

[c]. Easy to access ☐

[d]. Very easy to access ☐

11. Have you been exposed to situations or circumstances such as conflicts or moments of boredom-ness and loneliness since your discharge from the rehabilitation?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

12. Have you experienced any major life stressors such as loss of a job, loss of a loved one etc since you were discharged?

[a]. Never ☐

[b]. Rarely ☐

[c]. Sometimes ☐

[d]. Often ☐

[e]. Always ☐

Thank you for taking time to respond.

Appendix 3: Key Informant Interview

KEY INFORMANT INTERVIEW GUIDE

Thank you for accepting to undertake this Questionnaire. Please fill the blank or choose the most appropriate response. Your honest responses are appreciated.

Section A: Sociodemographic Information

1. What is your sex?

[a]. Male ☐

[b]. Female ☐

[c]. Others (Clarify) ☐

2. What is your occupation specialty? _____

Section B

1. What is your opinion on the burden of relapse among alcohol addiction patients managed at your rehabilitation centre?

.....
.....
.....
.....
.....

2. How would you rate the levels of relapse among alcohol addiction patients managed at your rehabilitation centre?

.....
.....
.....
.....
.....

3. What are some of the main factors that you would associate with relapse among alcohol addiction patients currently been managed at your facility?

.....
.....
.....
.....
.....

4. What are some of the recommendations that you would suggest to be considered in addressing the levels of relapse among alcohol addiction patients at your practicing facility?

.....

.....

.....

.....

.....

5. Which intervention do you use or do you believe are most effective for psychosocial and environmental factors?

.....

.....

.....

.....

.....

6. Any further recommendations and suggestions to help improve addiction treatment

.....

.....

.....

.....

Thank you for taking time to respond to the above questions.

Appendix 4: Advance Warning of Relapse Questionnaire

{Module Name} Module

Advance Warning of Relapse Questionnaire 3.0 (AWARE)

Agency Name: _____

Site Name: _____

ID #: _____

Date: ____ / ____ / ____

Please read the following statements and for each one check a number, from 1 to 7, to indicate *how much this has been true for you recently*. Please check one and only one answer for every statement.

	Never	Rarely	Some- times	Fairly often	Often	Almost always	Always
1. I feel nervous or unsure of my ability to stay sober.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
2. I have many problems in my life.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
3. I tend to overreact or act impulsively.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
4. I keep to myself and feel lonely.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
5. I get too focused on one area of my life.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
6. I feel blue, down, listless, or depressed.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
7. I engage in wishful thinking.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
8. The plans that I make succeed.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
9. I have trouble concentrating and prefer to dream about how things could be.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
10. Things don't work out well for me.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
11. I feel confused.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
12. I get irritated or annoyed with my friends.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
13. I feel angry or frustrated.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
14. I have good eating habits.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
15. I feel trapped and stuck, like there is no way out.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
16. I have trouble sleeping.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
17. I have long periods of serious depression.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
18. I don't really care what happens.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
19. I feel like things are so bad that I might as well drink.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
20. I am able to think clearly.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
21. I feel sorry for myself.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

ID #: _____

Date: ____/____/____

	Never	Rarely	Some- times	Fairly often	Often	Almost always	Always
22. I think about drinking.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
23. I lie to other people.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
24. I feel hopeful and confident.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
25. I feel angry at the world in general.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
26. I am doing things to stay sober.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
27. I am afraid that I am losing my mind.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
28. I am drinking out of control.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

SCORING:

Total the numbers circled for all items, but *reverse the scoring* for the following five items: 8, 14, 20, 24, 26. For these five items only:

If the client circles this number: 1 2 3 4 5 6 7
Add this number to the total score: 7 6 5 4 3 2 1

INTERPRETATION:

The higher the score, the more warning signs of relapse are being reported by the client. The range of scores is from 28 (lowest possible score) to 196 (highest possible score). The following table shows the probability of heavy drinking (not just a slip) during the *next two months*, based on our prospective study of relapse in the first year after treatment (Miller & Harris, 2000).

Probability of Heavy Drinking During the Next Two Months

AWARE Score	If <i>already</i> drinking in the prior 2 months	If <i>abstinent</i> during the prior 2 months
28-55	37%	11%
56-69	62%	21%
70-83	72%	24%
84-97	82%	25%
98-111	86%	28%
112-125	77%	37%
126-168	90%	43%
169-196	>95%	53%

Appendix 5: St. Nicholas Rehabilitation Centre and Psychiatric Hospital Map

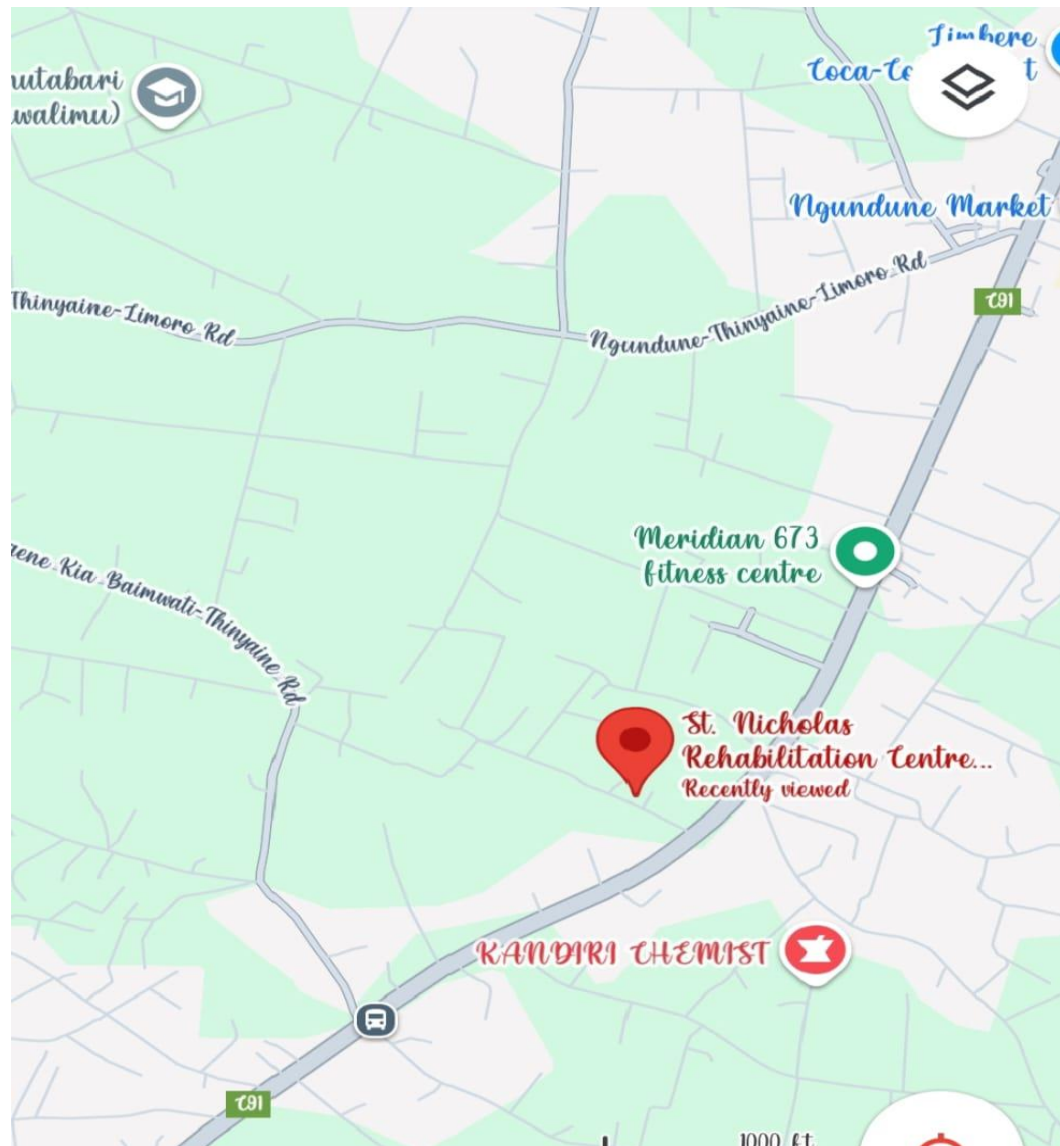


Figure 2
St. Nicholas Rehabilitation Centre and Psychiatric Hospital.

Appendix 6: Methodist Treatment Centre Map

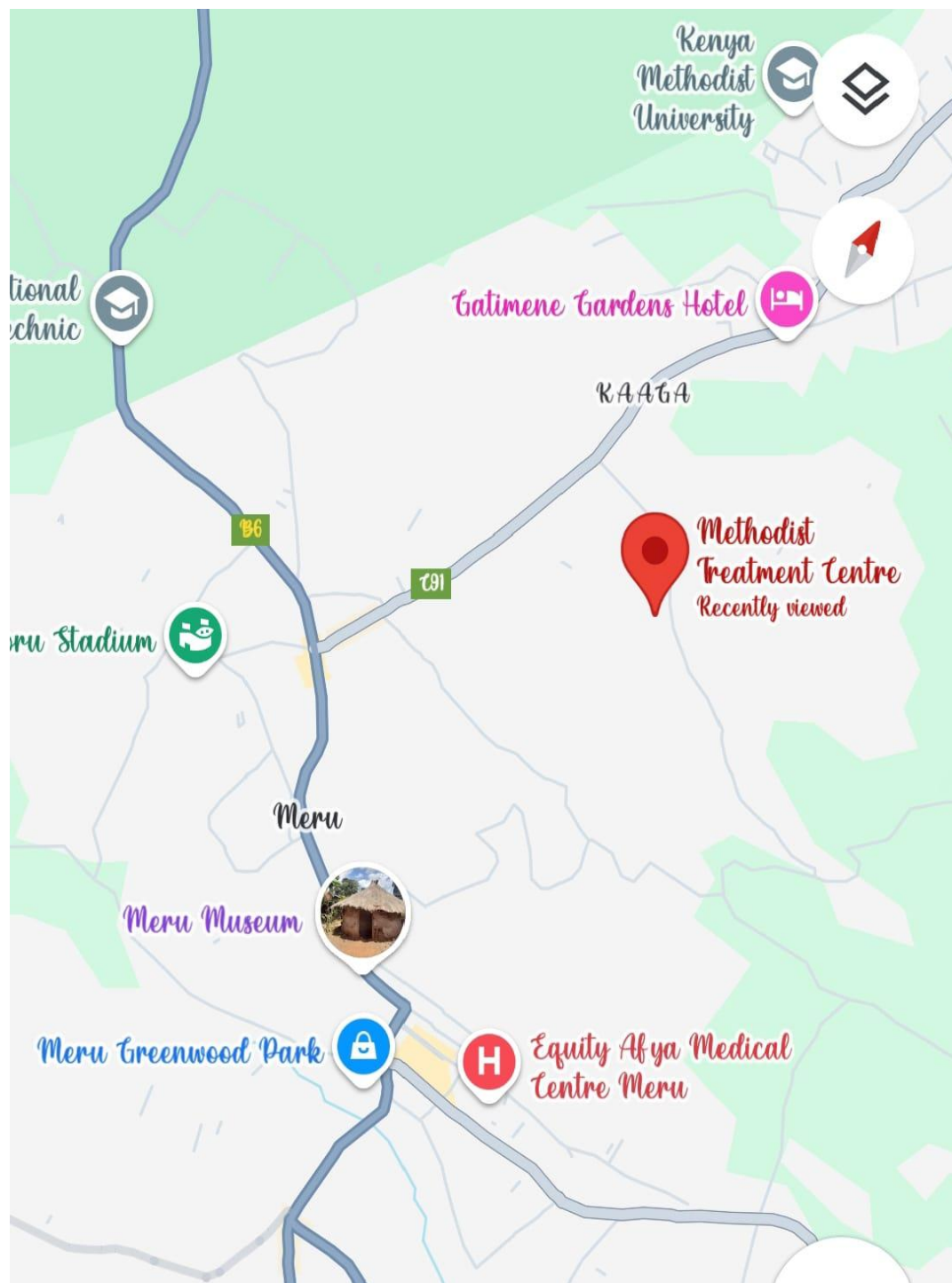


Figure 3
Map of Methodist Treatment Centre

Appendix 7: Holy Innocent BPSS Map



Figure 4
Map of Holy Innocent BPSS Timau Centre.

Appendix 8: Acceptance Letter from Methodist Treatment Centre



To be a model Rehabilitation Centre by providing high quality comprehensive and client's focused services

30th June 2025

TO WHOM IT MAY CONCERN

RE: CONSENT FOR DATA COLLECTION

I am writing to formally confirm that I give my permission to KISOMO MARY SYOMBUA, a Master's student at CHUKA UNIVERSITY to collect data for their academic research project.

The data collection purpose is solely for academic use. I acknowledge that the student has communicated the objectives, methods and expected outcomes of the study.

I consent to participate in or allow access to the required data under the following conditions;

1. Voluntary Participation
2. Confidentiality
3. Anonymity
4. Data Use.

Thank you for choosing MTRC as your data collection centre.

Yours faithfully

Rev DR. CATHERINE MUTUA

DIRECTOR-MTRC

catherinemutuaj@gmail.com

(0722-295-710)



Appendix 9: Acceptance letter from Holy Innocent BPSS Centre



HOLY INNOCENTS BPSS CENTRE TIMAU

We care for the carers

P.O BOX 146 10406, TIMAU Tel: +254 43647050 / 0100 416215

info.holyinnocentsbpss@gmail.com

MEDICAL IN CONFIDENCE

Mary Kisomo Syombua

Chuka University

P.O. Box 109-60400

Chuka, Kenya

RE: ACCEPTANCE TO CONDUCT RESEARCH AT HOLY INNOCENT BPSS CENTRE

Dear Ms. Kisomo,

We acknowledge receipt of your letter requesting permission to conduct a research study titled *"Determinants of Risk of Relapse among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County."*

We are pleased to inform you that your request has been approved. You are hereby granted permission to carry out your research at Holy Innocent BPSS Centre, subject to the following conditions:

1. All data collection activities must respect the confidentiality and privacy of our clients and staff.
2. Participants must provide informed consent before taking part in the study.
3. Your research activities should not interfere with the normal operations of the centre.

We appreciate your initiative in undertaking a study on such an important topic, and we hope your findings will contribute meaningfully to the improvement of care and rehabilitation services in the region.

Should you require any further assistance or clarification, feel free to contact us.

We wish you success in your research.

Yours sincerely,

Kelvin Mwea

Clinical Services Coordinator

Holy Innocent BPSS Centre



we care for the carers

P.O BOX 146 10406, TIMAU Tel: +254 43647050 / 0100 416215

Info.holyinnocentsbpss@gmail.com

Appendix 10: Acceptance letter from St. Nicholas Rehabilitation Centre



**ST. NICHOLAS REHABILITATION CENTRE
AND PSYCHIATRIC HOSPITAL**
Restoring lost Hope, Dreams and Talents.

23RD JUNE 2025

MARY SYOMBUA KISOMO
CHUKA UNIVERSITY
P.O BOX 109 – 60400
CHUKA.

Dear Ms. Kisomo,

RE: ACCEPTANCE FOR DATA COLLECTION

We are pleased to inform you that your application to conduct research titled *Determinants of Risk of Relapse Among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County, Kenya* has been successfully reviewed and approved.

We commend your interest in advancing knowledge in this vital area of mental health and addiction recovery. You are authorized to commence your research activities in accordance with the guidelines and regulations set forth by our facility.

1. No video taking of patients
2. Confidentiality and privacy of each participant to be ensured.
3. Participation to be on volunteer basis,

We look forward to supporting you throughout your research journey and wish you success in your work.

Should you require any further assistance or clarification, please do not hesitate to contact us.

Yours sincerely,



The Director,
St. Nicholas Rehabilitation Centre and Psychiatric Hospital.

P.O BOX 79726-00200 MUTHAIGA, NAIROBI
Phone: 0715 773374/0715773440/0704393969
EMAIL: director.stnicholasriti@gmail.com / www.stnicholasriti.co.ke
FACEBOOK: ST. NICHOLASRITI

Rehabilitating Treating Employing

Appendix 11: NACOSTI Permit

 REPUBLIC OF KENYA Ref No: 451094	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION Date of Issue: 05/August/2025
RESEARCH LICENSE	
	
This is to Certify that Ms.. Mary Syombua Kisomo of Chuka University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Meru on the topic: DETERMINANTS OF RISK OF RELAPSE AMONG PATIENTS TREATED FOR ALCOHOL ADDICTION AT SELECTED REHABILITATION CENTRES IN MERU COUNTY IN KENYA for the period ending : 05/August/2026.	
License No: NACOSTI/P/25/4177085	
451094 Applicant Identification Number	 Ag. Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Verification QR Code 	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

Appendix 12: Ethics Committee Approval



CHUKA

UNIVERSITY

Knowledge is Wealth (*Sapientia divitia est*) Akili ni Mali

CHUKA UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE

Telephones: 020-2310512/18

P. O. Box 109-60400, Chuka

Direct Line: 0772894438

Email: info@chuka.ac.ke

Website: www.chuka.ac.ke

11th July, 2025

REF: CUIERC/ NACOSTI/803

TO: Mary Syombua Kisomo

RE: Determinants of Risk of Relapse Among Patients Treated for Alcohol Addiction at Selected Rehabilitation Centres in Meru County, Kenya

This is to inform you that *Chuka University IERC* has reviewed and approved your above research proposal. Your application approval number is *NACOSTI/NBC/AC-0812*. The approval period is 11th July, 2025 – 11th July, 2026.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *Chuka University IERC*.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *Chuka University IERC* within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *Chuka University IERC* within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. 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.
- vii. Submission of an executive summary report within 90 days upon completion of the study to *Chuka University IERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely


Dr. Benjamin Kanga
SECRETARY

