EFFICACY OF MOTIVATIONAL INTERVIEWING THERAPY ON REDUCTION OF ALCOHOL USE DISORDER AMONG STUDENTS IN MOUNT KENYA UNIVERSITY, KENYA.

by

Rahab W. Gathuci

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APPROVAL

EFFICACY OF MOTIVATIONAL INTERVIEWING THERAPY ON REDUCTION OF ALCOHOL USE DISORDER AMONG STUDENTS IN MOUNT KENYA UNIVERSITY, KENYA.

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In accordance with Daystar University policies, this dissertation is accepted in partial fulfilment of the requirements for the Doctor of Philosophy degree.

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EFFICACY OF MOTIVATIONAL INTERVIEWING THERAPY ON REDUCTION OF ALCOHOL USE DISORDER AMONG STUDENTS IN MOUNT KENYA UNIVERSITY, KENYA.

I declare that this dissertation is my original work and has not been submitted to any other college or university for academic credit.

Signed: _____ Date: _____

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May God bless you all.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABCT	Behavioural Couples Therapy for Alcohol Use Disorder
ACMD	Advisory Council for the Misuse of Drugs
ADCU	Aids and Drug Control Unit
AHRQ	Agency for Healthcare Research and Quality
AIDS	Acquired Immune Deficiency Syndrome
APA	American Psychiatric Association
AUD	Alcohol Use Disorder
AUDIT	Alcohol Use Disorder Identification Test
CAU	Counselling as Usual
CBT	Cognitive Behaviour Therapy
CHE	Commission for Higher Education
CM	Contingency Management
DSM-5	Diagnostic Statistical Manual, Fifth Edition
HIV	Human Immune Deficiency Virus
IQR	Interquartile Range
KEMRI	Kenya Medical Research Institute
MDD	Major Depressive Disorder
MDFT	Multi-Dimensional Family Therapy
MI	Motivational Interviewing
MKU	Mount Kenya University
NACADA	National Authority for the Campaign against Alcohol and Drug Abuse
NACOSTI	National Commission for Science, Technology and Innovation
NHMRC	National Health and Medical Research Council
NIAAA	National Institute on Alcohol Abuse and Alcoholism

NICE	National Institute for Clinical Excellence
PTSD	Post-Traumatic Stress Disorder
RDS	Respondent Driven Sampling
SAMHSA	Substance Abuse and Mental Health Services Administration
SPSS	Statistical Package for the Social Sciences
TTM	Trans-theoretical Model
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

ABSTRACT

In many universities, there is a struggle with the issue of students' alcohol use resulting in alcohol use disorder (AUD). This study sought to establish the efficacy of Motivational Interviewing (MI) therapy in reducing AUD among Mount Kenya University (MKU) students. The study was guided by the social learning and stages of change theories. Quasi-experimental research design and quantitative methods of data collection were used. A sample of 105 respondents, aged 18-26 years, with an average age of 22 years was selected through stratified purposeful sampling. In order to assess for the efficacy of MI, a social-demographic questionnaire was used to capture respondents' demographic information, a Beck's Depression Inventory (BDI) to screen for depression, a Beck's Anxiety Inventory (BAI) to screen for anxiety, and an AUD Identification Test (AUDIT) to screen for AUD. Depression and anxiety were the comorbidity disorders of interest in this study. Screening was done at baseline, midline, and end line. The data was collected from two MKU campuses: Nairobi and Nakuru and was analysed using the Statistical Package for the Social Sciences (SPSS), version 23. As per the results, the male respondents with AUD were higher (10.9%) as opposed to the female ones (5.5%); the prevalence of AUD among the respondents was 16.3%; and MI therapy was efficacious in reducing symptoms of AUD among the respondents ($p=0.0001$). It is recommended that counselors in universities apply MI for the effective intervention of AUD among the university students.

DEDICATION

To my father, the late Josiah Gichau, who instilled in me the importance of education and encouraged my siblings and me to pursue diligence in our studies, I dedicate this study.

CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter presents the introduction and background to the study. It also presents the problem statement, purpose, objectives, research questions, justification, and significance. Additionally, the study assumptions, scope, limitations, and delimitations have been addressed in the chapter. Finally, definitions of key terms and concepts used in the study are also presented.

Alcohol consumption has not only been described as a societal issue of interest on matters health but also as a major contributor to distress all over the world An analysis of epidemiological data on alcohol by Babor et al. (2010) concluded that the substance contributes greatly to the problem of disease, disability, as well as death. Furthermore, its use results in negative social effects on its consumers.

The World Health Organization (WHO) has underscored alcohol consumption as "the world's third largest risk factor for disease and disability" (WHO, 2011. p. x). The detrimental use of alcohol accounts for nearly 3.3 million deaths worldwide alongside over 200 illnesses and injury conditions (WHO, 2014). Moreover, WHO has listed alcohol among the psychoactive substances with dependence producing properties, whose harmful use is rated among the highest threats for illnesses, disability, and death worldwide (WHO, 2014).

Alcohol use causes death and disability early in life and records show that it results in almost 4% of all deaths worldwide, with 9% of those deaths being of 15-29-year olds (National Institute for Health and Care Excellence [NICE], 2011).

Additionally, a report on the global burden for disease recorded 139,000 deaths as resulting from alcohol abuse and a further 384,000 from liver cirrhosis as a consequence of excessive alcohol consumption (Global Burden of Disease [GBD], 2013). A study by Falk, Yi, and Hiller-Sturmhofel (2008) also revealed that there were comorbid disorders associated with alcohol use, which are highest in the age category of 18 to 24 years.

Excessive use of alcohol by students in institutions of higher learning has been globally captured in literature. For instance, a survey of Vietnamese youth, who were mainly college students showed that the highest drinking rate occurs among 22-25-year old (62.2%), followed by 18-21-year old (57.9%) (United Nations, 2004). Researchers in a South African University found out that students in their first year of study, who were in the age category of 18-26 years consumed alcohol and this led to undesirable academic and social outcomes (Mogotsi, Nel, Basson, & Tebele, 2014). Furthermore, in Kenya, a study by Ndegwa, Munene, and Oladipo (2017) on factors influencing alcohol use among university students in a Kenyan University established that rise in alcohol consumption correlates with increased symptoms of prevalent mental ailments. According to a similar study by Boitt (2016), the prevalence of alcohol abuse among Egerton University students was 21.1%.

Atwoli, Mungla, Ndung'u, Kinoti, and Ogot (2011) found a lifetime prevalence rate of alcohol use among students in Eldoret to be 51.9%. Additionally, Takahashi, Wilunda, Magutah, Mwaura-Tenambergen, Wilunda, & Perngparn, (2017) in a cross-sectional study looking at the correlates of alcohol consumption in rural Western Kenya found that prevalence of alcohol intake in Western Kenya was higher than the estimation at the national level. This suggests that the social environment is a primary determinant of alcohol consumption and therefore, interventions to mitigate

alcohol consumption in various environments and applying effective measures to deal with its use need to be taken seriously.

Some earlier reports have indicated that 76.3 million people suffered from alcohol use disorder (AUD) worldwide because of excessive alcohol consumption (NICE, 2011). AUD has also been linked with disease, mental health issues, disability, and death; as well as with negative social-economic outcomes. The combination of AUD and associated problems increases the severity and complicates the effects of diagnoses, causing difficulties in the treatment of clients. In this regard, Westra, Aviram, and Doell (2011) argued that an effective intervention is required to manage the challenge of alcohol misuse, as well as boost treatment among users.

Although there has been considerable research conducted over time, the area of intervention seems not to have been thoroughly explored especially in the developing countries (Kumar, O'Malley, Johnston, Schulenberg, & Bachman, 2002). This means that the importance of coming up with intervention measures and effective treatment models to deal with alcohol abuse among university students cannot be overlooked. Students would need to resolve their alcohol use problems fast enough in order to proceed with their academic work and complete their studies on time.

According to Miller and Rollnick (2013), motivational interviewing (MI) is a counseling method that assists clients to address uncertainty and find inspiration towards behavioral transformation (Substance Abuse and Mental Health Services Administration [SAMHSA], 1999). It is a directive, short-term therapy that is empathetic, and since it combines with genuineness, it assists the client to experience positive change. MI "builds on Carl Rogers' optimistic and humanistic theories about people's capabilities for exercising free choice and changing through a process of

self-actualization" (SAMHSA, 1999, p. 39). The counsellor attempts to understand the client's perspective, makes clear the connection between existing behaviour and aspiration and encourages self-efficacy towards boosting motivation for change (Miller & Rollnick, 2013). MI is highly advocated as a component of the overall treatment for individuals experiencing alcohol use disorders.

Among the various brief therapies to be used in cases of hazardous drinking advocated by WHO's mhGAP-Mental Health Gap Action Program guidelines is MI (WHO, 2016). Some studies (Rendall-Mkosi et al., 2013; Sorsdahl et al., 2015) reported the use of some MI therapeutic techniques in South Africa with success. In Kenya, research has been conducted on MI with favourable results. A study by Gisore, Kaseje, Were, & Ayuku (2014) on health-seeking behaviors of pregnant women in Western Kenya determined that women understood the need of breastfeeding after MI therapy, an indication that the therapy was successful. This current study aimed at evaluating if MI was efficacious in the reduction of AUD among university students.

Reilly, Noronha, Goldman, and Koob (2017) noted that the 5th edition of the diagnostic and statistical manual of mental disorders (DSM-5) "in 2013 combined the two separate diagnoses of alcohol abuse and alcohol dependence from the DSM-IV into a single dimensional diagnosis of alcohol use disorder (AUD)…" (p. 2). AUD is among the highly prevalent mental health disorders and a prominent cause of illness and death (American Psychiatric Association, 2013). The diagnosis is based on a standard where anyone meeting any two of the 11 symptoms during the same 12-month period would receive a diagnosis of AUD (American Psychiatric Association, 2013). The severity of an individual's AUD is broken into three sub-categories, namely mild, moderate, or severe (American Psychiatric Association, 2013). AUD is

mild where there is the presence of two to three symptoms as indicated in the criteria; moderate where four to five symptoms are found; and severe where the symptoms are six or more (American Psychiatric Association, 2013).

According to O'Flynn (2011), the short-term effects of AUD include memory loss, hangovers, and blackouts. Long-term problems associated with heavy drinking include stomach ailments, heart problems, cancer, brain damage, serious memory loss, and liver cirrhosis (American Psychological Association, 2012). Heavy drinkers also markedly increase their chances of dying from automobile accidents, homicide, and suicide. AUD can worsen existing conditions such as depression or induce new problems such as serious memory loss, depression, or anxiety (O'Flynn, 2011).

1.2 Background to the Study

Consumption of alcohol is common in many cultures around the world, either as a part of daily meals or during occasions of special significance (Miller et al., 2004). Over and above its contribution to the world health burden, the use of alcohol has contributed to other major health conditions; and it highly ranked among the issues that cause early death in the world (Rehm, 2011). However, the WHO 2014 global status report on alcohol and health documented that different forms of fermented alcoholic beverages were common among various societies, especially in Africa (WHO, 2014).

In the societies where alcohol was traditionally consumed, it was produced commonly on a small-scale household level, and mostly when and where agricultural surpluses were available (Room et al., 2002). Drinking alcohol was thus often an occasional and communal activity, associated with particular communal festivities. Among the substances of abuse that are popular in Kenya, alcohol ranks top on the list and is known currently as a cause for major problems across various populations in

the country. It affects about 70% of families in Kenya, and records have indicated that there are about two million people addicted to substances, of whom, 90% are addicted to alcohol (NICE, 2011).

For individuals to be diagnosed with AUD, they should meet specific criteria as stipulated by the DSM-5. The severity of AUD (mild, moderate, or severe) is based on the number of symptoms met by the alcohol user (National Institute of Alcohol Abuse & Alcoholism [NIAAA, 2014). Further, anyone meeting any two symptoms in the diagnostic criteria during the same 12-month period gets a diagnosis of AUD (NIAAA, 2014). AUD is mild where there is the presence of two to three symptoms as indicated in the criteria; moderate where four to five symptoms are found; and severe where the symptoms are six or more (American Psychiatric Association, 2013).

The diagnostic criteria are indicated by DSM-5 as a troublesome trend of alcohol consumption, resulting in clinically substantial deficiency or anguish, as exhibited by no less than two symptoms, happening within the 12 months (American Psychiatric Association, 2013). According to NICE, some of the symptoms of AUD as stipulated by DSM-5 include the following:

> Alcohol is often taken in larger amounts or over a longer period than was intended;... a persistent desire or unsuccessful efforts to cut down or control alcohol use; …a great deal of time…spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects;…craving, or a strong desire or urge to use alcohol; [and]… recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home. (Buddy, 2019, para. 5)

Other symptoms of AUD include sustained drinking despite incessant or

frequent social or relational challenges arising from or intensified by drinking outcomes (Agency for Healthcare Research and Quality [AHRQ], 2014). Moreover, key societal, work-related, or leisure endeavors are ceded or decreased due to drinking. Additionally, there is repeated drinking in settings where it is environmentally endangering (AHRQ, 2014); as well as sustained drinking "despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol" (AHRQ, 2014, p. 3). AUD ranges from hazardous to harmful drinking, and ultimately to alcohol dependence (O'Flynn, 2011).

Alcohol dependence is a disease with biological, psychological, and social determinants, and it is characterized by a fierce desire to take alcohol; loss of control; physical addiction; and the need to consume alcohol in higher quantities with the aim of becoming intoxicated (NICE, 2011). In many cases, people will link alcohol with enjoyment; hence they do not consider the repercussions awaiting them should they consume it. "Like many other diseases, alcoholism [otherwise known as alcohol dependence], is chronic, meaning that it lasts a person's lifetime… [and] the risk for developing alcoholism is influenced both by a person's genes and by his or her lifestyle". (MedicineNet, 2008, para. 4)

Additionally, alcohol use is related to comorbid mental disorders that include depression and anxiety. Research by Neupane (2011) among patients with AUD in Nepal found out that major depression was common. In a study in Nigeria, Ugochukwu, Donald, and Chukwuemeka (2016) recorded a significantly high prevalence of AUD among people with high depressive symptoms. Agyapong (2013) also discovered comorbidity between AUD and depression among Kenyan college students. Besides, other researchers have expressed the need for more studies to

provide interventions for the prevention of use and of relevant comorbidities; thus suggesting a relationship between addictions and other comorbidities (Muriungi, Ndetei, Karanja, & Matheka, 2013).

Presently, thousands of rehabilitation systems provide to alcohol consumers an array of therapies: conventional, evidence-based care, and more experimental or holistic services. Alcoholics Anonymous (AA), though not designed as a clinical treatment, is the extensively applied approach for alcohol abstinence (Brand & Koch, 2016). It has been a great resource for many, whether used alone or in combination with another therapy. Anderson, McGovern, and Dupont (1999) reported of another approach known as the Minnesota model, about which they stated as follows:

> it was developed by professionals at a State hospital in Minnesota and promulgated by the Johnson Institute and the Hazelden Foundation and combined the first five steps of AA with lectures on the disease concept of alcoholism and some practical supportive psychotherapy. Central to the Minnesota model's concept was the use of staff members who themselves were in recovery from alcohol dependence, along with others. (as cited in Willenbring, 2010, p. 56)

Despite the fact that AA is generally accepted as a useful mutual-help program for recovering alcoholics, not everyone responds to its style or message. According to the U.S. Department of Health and Human Services' Center for Substance Abuse Treatment (2012), cognitive-behavioral therapy (CBT) is a method of intervention that could be used to stop relapse when treating alcohol use. The strategies used in CBT isolate the formation of maladaptive behavior practices, for example, alcohol abuse without ignoring learning processes, which have a critical purpose. After identifying maladaptive behavior patterns, the clients then learn to correct the problem

behavior by using skills that would alleviate both the alcohol abuse problems and/or any other co-occurring problems.

Central to CBT is the awareness of problems likely to occur and helping the clients to work on self-control, which in the view of McHugh, Hearon, and Otto (2010) is done by training the clients to develop effective coping strategies. Some of the techniques used include identifying notable consequences of continued alcohol use, monitoring, and recognizing the cravings so as to find out what can more easily drive the client to use alcohol. Another technique is to come up with methods of helping to deal with cravings and thus avoid risky exposure. The skills that the alcohol users learn through CBT hold on for long after the completion of treatment.

Contingency management (CM) is a therapy method that uses systematic reinforcement of self-restraint, generally with using actual commodities or monetary exchange for analysis of urine without medication. Higgins, Wong, Badger, Ogden, and Dantona (2000) used the intervention for a study of persons having cocaine abuse. Similarly, strong beneficial results of the method were obtained for joint use of substances that result in disorders such as opium and cocaine, and alcohol and marijuana use disorders (Petry, Bickel, & Arnett, 1998). However, CM uses tangible rewards towards the promotion of treatment turnout, and/or abstinence from alcohol or drug use (Higgins et al., 2000).

During its inception, the MI therapy was developed as an empathetic, non-argumentative counselling style that develops discrepancy in a client in order to motivate change. The intervention is widely recognized and supported for treating of AUDs (Miller & Rollnick, 2013). It is defined as a person-centred, directive method of communication for boosting the underlying reason for transformation through discovering and sorting out uncertainty. The therapy brings about changes in

behaviour in helping users to focus on their own life goals and explore their values hence changing how they carry on with life, consistently aiming at achieving their goals of choice. This therapy incorporates Carl Rogers' principles of UPR: genuineness, empathy, and warmth - as essential components for behaviour change. It also takes into account some barriers to bringing about change in the client which include non-acceptance and negative confrontation.

Miller and Rollnick (2013) maintained that MI is based on five motivational principles that underpin its skills, namely expression of empathy, developing discrepancy, supporting self-efficacy, avoiding argumentation and direct confrontation, and rolling with client's resistance. Expression of empathy, being fundamental in defining MI, is achieved through reflective listening. The client is made to feel valuable, a stance that helps to facilitate behaviour change. Developing discrepancy involves isolating the inconsistencies between the clients' goals and their current behaviour. It should happen in an environment of support and acceptance so that the clients' awareness towards the discrepancy can be illuminated; thus helping them to rethink the priorities and concentrate on their goals and values (Miller & Rollnick, 2013).

Encouragement regarding clients' self-efficacy and optimism is crucial in the anticipation for change. Clients may more often feel as though they lack the resources necessary to change their maladaptive behaviours and thus, support is necessary to help them believe in themselves, overcome barriers, and conceive a positive view of self. This will arouse their self-confidence and enable them to get ahead so as to attain their intended goals (Miller & Rollnick, 2013). The last principle of MI is avoiding argumentation and direct confrontation. Arguments are counterproductive, and they make the clients defensive, which provides a ground for resistance.

Miller, Yahne, and Tonigan (2003) indicated that without motivation to change there would be no positive response to treatment. This is because lack of motivation acts as an obstacle in the treatment of AUDs. Reports have indicated that all over the world, roughly 2 billion (33%) use alcohol with 76.3 million having been diagnosed with AUDs (NICE, 2011). Such a scenario shows that alcohol ranks highest among the substances of abuse mostly consumed globally (Basangwa et al., 2006). It is no wonder then that the WHO (2014) recorded that 18 million Americans were suffering from alcohol abuse or dependence.

The WHO's 2014 global status report on alcohol and health demonstrated that Europe is the heaviest drinking continent in the world (WHO, 2014). There is an indication that alcohol use among the youth between the ages of 18 and 29 years, a population which also represent university students, is particularly high and according to Harrington et al. (2008) this report is of concern and is naturally disturbing. Studies have shown that students today use more of alcohol, and binge drink with the aim of getting drunk more in comparison to the past (Carey, Scott-Sheldon, Carey, & DeMartini, 2007). In the view of Heather et al. (2011), students on average consumed about 1.7 drinks each day, they experienced about three episodic and abusive drinking every month and probably recorded 10% dependence on the substance. Studies have also demonstrated that problem drinking ranged from a low of 2.5% in Germany to a high of 94% in Ireland (Dantzer, Wardle, Fuller, Pampalone, & Steptoe, 2006; Heather et al., 2011).

The WHO has ranked Africa top in terms of heavy episodic drinking worldwide (at 25.1%) which can be contrasted with the lowest rates for Europe and Western Pacific - at 11.0% and 8.0%, respectively (NICE, 2011). Alcohol consumption among students in Africa is shocking, stretching to more than 5 billion

litres of alcoholic drinks yearly. In South Africa, a survey conducted at the University of Venda reported on the use of alcohol on campus from 209 students interviewed, with the results exhibiting that over 65% of the students use alcohol, of which 49% abuse it (Kyei & Ramagoma, 2017).

A study by Chikere and Mayowa (2011) established that in Nigeria, the prevalence of drinking amongst university students was at 78.4%, with 27% being heavy drinkers. Another study reported the prevalence of over-drinking among university students in Malawi as 54.1% among males and 16.5% among females (Zverev, 2008). An investigation into the predictors of substance use, focusing on medical students in Addis Ababa University - Ethiopia, found that 31% of the students - from the first year to internship - were lifetime users of alcohol and 22% had taken alcohol in the past year (Deressa & Azazh, 2011). Studies in Tanzania and Uganda revealed prevalence rates of alcohol use of 30.3% and 41.1% respectively (Francis, Grosskurth, Changalucha, Kapiga, & Weiss, 2014). Additionally, Stafstrom and Agardh (2012) found that almost half of the students in Mbarara University in Uganda were current alcohol users, and a quarter of them had engaged in heavy episodic drinking (Stafstrom & Agardh, 2012).

Alcohol abuse is a worldwide health problem, and therefore, treatment is necessary (NICE, 2011), to fully address the problem internationally. In order to identify the problematic use of alcohol, it is recommended that screening by use of appropriate instruments be done. This would help to focus on the appropriate intervention in the high-risk alcohol users, including students, thus reducing the alcohol-related problems early enough (Carey et al., 2007).

According to McCabe, Boyd, Cranford, Morales, and Slayden (2006), any of the screening instruments such as the cut-down, annoyed, guilty, eye-opener (CAGE),

dynamic application security testing (DAST), and alcohol use disorders identification test (AUDIT) are appropriate in alcohol use assessment. Nevertheless, screening rarely includes an assessment of any of the precursors that could relate to the development of addiction. These individual characteristics need to be put into account since they too contribute significantly to the use of alcohol. Consequently, screening for AUD should regard particular personal attributes that contribute to the disorder (Arria et al., 2013). Though screening for drinking problems will capture individuals who are currently experiencing problems, it will not necessarily identify individuals who will develop problems sometime in the future. It is, therefore important to use instruments that will achieve all-round screening (McCabe et al., 2006).

Arria et al. (2013) contended that substance use disorders (SUDs) arise from the interaction between a person's personality, the environmental conditions, and personal experiences that might either worsen or lessen the person's proneness to development of addiction. Heavy drinking is linked to several risk factors among university students. Such factors include where the student lives (whether on the campus or off-campus) (Harford, Wechsler, & Muthen, 2002), whether one is a member of a social organization, and the student's perception of social norms. Other factors include the students' personality (Grekin & Sher, 2006) and peer influences (Parra, Krull, Sher, & Jackson, 2007). Though many studies have been done in this area, most of them have developed explanatory models for heavy alcohol use, with only a few having assessed the predictors of the development of AUD. Furthermore, rarely have studies been conducted to assess the interplay between multiple dimensions of liability on the development of SUD among college students (Jackson, O'Neill, & Sher, 2006).

The Government of Kenya (as cited in Boitt, 2016) indicated that "alcohol

abuse in institutions of higher learning in Kenya threatens the achievement of [the country's] Vision 2030 and holistic wellbeing" (p. 61). Generally, it is reported that alcohol use is significant in Kenya. Within the ages of 15-65 years in Kenya, about 30%, reported to have ever used alcohol sometime in their life and about 13.3% are current users. This totals to roughly 4 million people who have used alcohol in the country. Another survey conducted among students at a Kenyan university reported a considerably high prevalence rate of 84.2% of alcohol abuse (Odek-Ogunde, & Pande-Leak, 1999). Additionally, Atwoli et al. (2011) found a lower preference at 51.9%.

Although it is not easy to verify the real magnitude and nature of alcohol misuse among students in academic institutions, studies have pointed out that a high number of students experiment with and abuse alcohol (Chesang, 2013). A study by Hassan (2013) focusing on alcohol abuse among University of Nairobi students found the prevalence of alcohol to be 63.2%. Regrettably, this is much higher than the prevalence in other East African nations. The Daily Nation Newspaper, Tuesday 15 July 2014 reported that some of the 27 people, who died after consuming alcohol in Nyeri County, were university students and adolescents, aged between 15 and 20 years (Maithya, Okinda, & Mung'atu, 2015)

Reportedly, serious effects of alcohol use both socially and on the user's health have been reported. Therefore, its prevention and control has become a shared main concern in relation to health. WHO (2014) posited that alcohol use has resulted in as many as 1.8 million deaths, with one-third of this resulting from unintentional injuries. It also causes a loss of 58.3 million regarding disability-adjusted life years, of which 40% are due to neuropsychiatric conditions. As cited in Masaba (2017, p. 11), the government of South Australia, stated that "the use of alcohol is responsible for a

record 30% of road accidents, 44% fire accidents and 34% drowning accidents and falls". The report also recorded child abuse cases at 16%, suicides at 12%, and 10% of industrial accidents. Reportedly 67% of one's years of living are also lost as a result of drinking alcohol.

Reports have suggested that when alcohol is used excessively, there are health effects observed which include damaged brain and heart and cancers such as lung cancer. Included also are social problems which include rape, poverty, debt, and a high rate of crime; poor judgement; and sexual problems (Peltzer, Pengpid, & Tepirou, 2016). In a study which focussed on helping students who used alcohol to cope with issues of depression and abstract cognition, Bravo, Pearson, and Henson (2017) found out that alcohol misuse was a strong predictor of students' mental health issues. It was attributable to increased depressive symptoms, which led to students drinking to cope (Bravo et al., 2017). Other problems caused by alcohol use include attempted suicide and other self-harm behaviours (Peltzer et al., 2016; Toprak, Cetin, Guven, Can, & Demircan, 2011).

While previous studies have shown the effects of alcohol abuse, they have failed to mention the effective intervention to reduce or eradicate the vice. More so, they have failed to show the successful contribution of MI therapy towards lessening alcohol use among university students. Therefore, there is need for further research in the area of clinical psychology to establish effective interventions in the treatment of AUDs. The result then, would be interventions that can enhance treatment among alcohol users (Westra et al., 2011).

Currently, research demonstrates that there is evidence for the efficiency of MI therapies as brief interventions for alcohol use, though not on university students (Miller, 2009). All the same, interventions for reducing high-risk alcohol consumption

among university students are ongoing. A study by McHugh et al. (2010) observed that MI is effective in increasing future attempts to stop alcohol use and that if it was given in higher dosage, more positive results would be achieved. The MI therapy has been proven successful among various populations identified as problem drinkers. Such include adolescents (Carroll et al., 2012), binge drinkers (Stanger, Budney, & Bickel, 2013), both inpatient and outpatient adults, and high-risk college student drinkers (Krishnan-Sarin et al., 2013). Meta-analytic reviews of MI have also demonstrated clinically significant effect sizes.

Various studies have demonstrated MI's potential in increasing treatment. Nyamathi et al. (2010) evaluated the effect of MI towards the reduction of alcohol use and observed that alcohol use reduced significantly after treatment. Further, a randomized study where middle school students who took sessions of MI therapy were able to boost their math grades demonstrated that MI was effective in assisting students struggling in their academics (Strait et al., 2012; Terry, Strait, McQuillin, & Smith, 2014). Still, concrete evidence is lacking regarding the specific university population struggling with alcohol use, and it is unknown how efficacious MI is in the reduction of AUD among university students in Kenya. Additionally, students who have problems with alcohol drinking problems are reluctant regarding seeking therapeutic intervention for their mental health challenges (Hunt & Eisenberg, 2010). Yet, according to Flaherty (2008), the MI approach appears to be a natural fit for adolescents and young adults. It has also been widely accepted as a counselling style for promoting behaviour change, and this researcher hopes that MI will help reduce alcohol use among university students.

Currently, in Kenyan universities, systematic identification of at-risk students and effective intervention is yet to be seriously done, and as pointed out by Barnett et

al. (2004), institutions only undertake this during times of crisis. The institutions only identify such students after major incidents of alcohol use, followed by dire consequences. Such consequences could include crime, arrests, road accidents, drug overdose, poisoning, or substance-related death (Esser, Kanny, Brewer, & Naimi, 2012).

Universities and colleges could offer a very conducive environment for early substance screening and intervention. The opportunity to do so is also present, and if correctly implemented, early screening and intervention strategies could capitalize on university students' motivation to perform well academically. Additionally, one can ensure effectiveness by considering the complexity of the etiology of AUD, as well as accounting for developmental changes that relate to the college years. This approach holds the promise to alter the directions that students who may be at risk for the development of AUD take.

1.3 Statement of the Problem

Researchers have indicated that despite the increasing challenges resulting from worldwide alcohol misuse in universities, precise information on the vice's prevalence among university students in Kenya is still inadequate (Andersson, 2009; Boitt, 2016; Lorant & Nicaise, 2015;). This is so even though in almost all universities, Mount Kenya University (MKU) included, there is a struggle with the issue of students' alcohol use (Rimbere & Kabunga, 2017).

As reported by Atwoli et al. (2011), use of alcohol results in considerable medical and social problems; hence the prevention and management of the challenge (alcohol use) are of significant concern. Individuals who abuse alcohol experience an increased likelihood of comorbidities, such as depression and anxiety. There is, therefore need for interventions that would boost treatment among alcohol users.

According to Okech (2014), the Kenyan Government continues to develop programs and strategies that would be globally applied in alcohol use intervention. However, despite a protocol by the government of Kenya, Ministry of Health (2017) having outlined the psychosocial interventions, it does not indicate the efficiency of the interventions in alcohol use treatment.

Reportedly, there is an indication that MI is effective as a therapeutic model for behavior change and that it helps to build on the client's enabling ability by supporting self-efficacy (Westra et al. 2011). Another study by Snape and Atkinson (2017) recorded that MI is effective in supporting disaffected students, while Gisore et al. (2014) also found MI to be effective in helping health-seeking pregnant mothers. In the studies where MI was used, the treatment group produced significant improvement compared to the group that did not receive the treatment; and regarding AUD, Brown, DeMartini, Sales, Swartzendruber, and DiClemente (2013) recommended efficacious intervention approaches.

The results of the discussed studies showed that while MI was useful for treatments among other populations, not much is on record regarding addressing AUD among university students. Consequently, there remains a gap in the literature on the effectiveness of MI in reducing AUD among university students, and this is the gap that this study sought to bridge.

1.4 Purpose of the Study

The purpose of this study was to assess the efficacy of MI therapy on reduction of AUD among students in Mount Kenya University.

1.5 Objectives of the Study

1.5.1 Broad objective

The broad objective of this study was to assess the efficacy of MI therapy in

reducing AUD among students in Mount Kenya University.

1.5.2 Specific objectives

The objectives of this study were as follows:

1. Establish the prevalence of AUD among students in Mount Kenya University, Nairobi.
2. Find out the factors that put Mount Kenya University students at risk of alcohol use.
3. Determine the common comorbidities resulting from alcohol use among students in Mount Kenya University, Nairobi.
4. Assess the efficacy of MI therapy on AUD among students in Mount Kenya University, Nairobi.

1.6 Research Questions

1. What was the prevalence of AUD among the students using alcohol in Mount Kenya University, Nairobi?

2. What were the factors exposing students in Mount Kenya University to the risk of alcohol use?

3. What were the common comorbidities as a result of alcohol use among students in Mount Kenya University, Nairobi?

4. What was the level of effectiveness of MI therapy on AUD?

1.7 Justification for the Study

The National Authority for the Campaign against Alcohol and Drug Abuse (NACADA, 2015) held that alcohol and drug abuse (ADA) is currently among the major global issues in the world. Reportedly, it (ADA) is gaining notoriety and rising fast, especially among the youth. In a conference organized by NACADA,

respondents unanimously supported the declaration of alcohol as a national disaster in Kenya (NACADA, 2015). The declaration was prompted by current trends and changing demographics in relation to alcohol use among all age groups.

The ages between 18 and 26 years mark the transitional period from childhood to young adulthood. This transition to adulthood for university students is marked by a change of roles and responsibilities in such interrelated domains as education, employment, and family formation. Notably also, in this age of transition, students are no longer under direct parental supervision, and therefore, they easily enter a new environment of assumed freedom. Together with this, a study by Atwoli et al. (2010) reported an increase in the prevalence of alcohol use among such students while Muriungi et al. (2013) reported that the risk of alcohol use exists among students at different levels.

The most common methods used in dealing with alcohol use, especially in rehabilitation centres include the 12-step program of the Minnesota model, therapeutic community model, and the medical model (Musyoka, 2013). In universities in Kenya, "substance abuse prevention programs are provided by social support systems… which closely work with students in providing life skills education, support and coping strategies" (Rohoh, 2014, p. 10). The departments include counseling, chaplaincy, coaching, and mentorship - and are found in most universities, including MKU (Ronoh, 2014). Nevertheless, the usual counselling methods carried out in the universities need to be strengthened for more effectiveness. As such, there is need to come up with good therapeutic treatment models that university counsellors can use to alleviate the ever-increasing challenge of alcohol use in the universities and also fill the knowledge gap.

1.8 Significance of the Study

This study was considered useful in therapeutically addressing AUD among students in MKU, Nairobi Campus. The findings of the study will be important in helping the university student counsellors to address alcohol use promptly, consequently enabling personal growth on the part of the students, as well as the integration of societal values. The findings will also provide guidance to the University management, hence enabling them to make appropriate decisions to strengthen the counselling departments in universities.

It is also hoped that the findings will be used by stakeholders in various government and educational agencies in making policies regarding counselling services in the universities. With this, the respective departments will be able to select the more effective methods of alcohol use control, hence recommending those methods for use.

Finally, the researcher expects that the study recommendations will raise awareness on the significance of effective counselling services. The findings would also help in filling the gaps in research, thus prompting other researchers to undertake further studies in the area of alcohol use therapy.

1.9 Assumptions of the Study

The assumptions that were made and achieved in this study by the researcher were as follows:

1. The respondents were available for the study and honestly disclosed their information. Their availability and honesty enabled the researcher to show the prevalence of AUD.
2. The respondents cooperated with the researcher in expressing their real mode of behaviour and outlook concerning alcohol use in response to the questions asked. This made the work of the researcher easy due to the

maximum cooperation received from all the respondents.

3. The respondents consented to assessment for AUD as required. This enabled the researcher to carry out the study fully and isolate the comorbidities associated with AUD.
4. The assumption that the respondents had experienced alcohol use problems was true.
5. At the conclusion of the study, MI was found to have an effect on the respondents who were found to have AUD.

1.10 Scope of the Study

The aim of the current study was to establish whether MI therapy was efficacious in reducing AUD among students in MKU, Nairobi Campus. In the campus, there are students at all levels, namely diploma, undergraduate, master's, and doctorate in many disciplines. The modes of study also vary from regular, evening, school-based, virtual, and weekend. The students in the various programs vary in age from 17 to 60 years. The researcher chose MKU, Nairobi Campus, owing to the consideration of the large population of students and availability of all modes of study.

The respondents of the study were drawn from the undergraduate students from the regular/day and evening modes of study in the schools of Business, Education, and Social Sciences. The two modes of study were selected because they were found to be most appropriate, considering that school-based students only come to campus during school holidays, while the weekend mode ones only attend school on weekends. Additionally, it would not have been possible to make contact with the students who are on the virtual mode.

Homogeneous purposive method was applied to select the Nairobi campus as the experimental site. The undergraduate students were considered appropriate subjects for the study because most of them are in the ages of 18-26 years, which was the study's focus population. The three schools: School of Business, School of Education, and School of Social Sciences, were selected because of the corresponding characteristics of the students in the schools.

The students were divided into two groups: experimental and control. The experimental group, which was in Nairobi campus, received the MI therapy with an emphasis on self-efficacy while the control group (Nakuru campus) received counselling as usual (CAU). Considering the foregoing, the current study conducted weekly sessions in three months. The therapist together with research assistants delivered the MI intervention with five general principles in mind. However, much emphasis was put on supporting the respondents' self-efficacy, which was majorly the focus of this study.

1.11 Limitations and Delimitations of the Study

The researcher noted some limitations while carrying out the study and delimited them as follows:

Some respondents were not willing to freely give information concerning their drinking habits since the issues of alcohol use are sensitive. The researcher took time to build rapport with the respondents, and in the end, the latter felt free to open up and give information.

Some of the respondents feared victimization. To address this, the researcher assured them of total confidentiality and advised them not to write their names on the research instruments. The researcher used professional counsellors to collect data and conduct therapy to assure the participants of no bias.

Some researchers have reported that MI therapy is effective in the treatment of various conditions, including alcohol and substance abuse. The researchers have mostly applied the five principles of MI, but this study limited itself to MI efficacy only. Self-efficacy is a critical component and an essential motivator of behaviour change, and this study found it crucial to allow clients to utilize their capacity to achieve their goals through this motivation.

The challenge of time: There were many interruptions in the process of conducting therapy because of the university programs. Nevertheless, the researcher was able to plan with the participants on how to use the available time.

1.12 Definition of Terms

Alcoholism: Intense and strong inclination to use alcohol, far above the ability to control without consideration of any moral boundaries or rules of common sense (Andrews, 2017). In this study, the definition was adopted.

Assessment: This is the psychological and social evaluation of an individual to come up with a diagnosis of a psychological problem. The same meaning for the term was applied in this study.

Alcohol use disorder (AUD): Cluster of behavioural and physical symptoms including withdrawal, tolerance, and craving. The same meaning was used in this study.

Adolescent: A person transitioning from childhood to adulthood. This study applied the same definition.

Binge drinking: Heavy episodic drinking of alcoholic beverages, in order to become inebriated (Renaud, 2001). In this study, the same meaning was adopted.

Cognitive behavioural therapy (CBT): A form of psychotherapy, used to treat

a variety of mental problems. The same meaning was applied in this study.

Diagnostic statistical manual of mental disorders, fifth edition (DSM-5): A manual used by clinicians and researchers to diagnose and classify mental disorders. The same meaning was used in this study.

Efficacy: Outcome of expected results of therapeutic services offered in the study. This study used this definition.

Motivational interviewing (MI): "Psychotherapeutic method that is evidence-based, relatively brief, specifiable and applicable in several problem areas" (Miller as cited in Petrolienė, 2013, p. 68). The same meaning was applied in this study.

Student counsellor: A professionally trained staff member charged with the responsibility of offering counselling services to students. The study used this definition.

Therapy: A treatment for psychological problems where clinicians and clients work together to understand client issues and come up with plans for fixing them. This definition was applied in this study.

Youth: Anyone aged between 18-24 years of age (UNODC, 2012). In this study, youth referred to students within the study sample.

1.13 Summary

This chapter has presented the background to the study. The focus has been on the introduction of AUD, overview of MI therapy, and alcohol use among students. The chapter has also covered the study's problem statement, purpose, objectives, research questions, justification, and significance. Additionally, the study assumptions, scope, limitations, and delimitations have been addressed in the chapter. Finally, definitions of key terms and concepts used in the study have been provided. The next chapter focuses on a review of the literature available on alcohol abuse in

universities, and AUD; the theoretical framework for the study; and the conceptual framework.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical framework of the study, followed by a brief history of alcohol use. This is followed by a review regarding the prevalence of the abuse of alcohol, factors that expose university students to risky alcohol behaviour, and effects of alcohol abuse. Common comorbidities, together with interventions that are applied to reduce the vice, are also presented. Finally, the conceptual framework proposed for the study is presented.

2.2 Theoretical Framework

The theoretical framework for the current research was informed by two theories: The social learning theory and the stages of change theory. The social learning theory stipulates that human beings learn new behaviour through observing, modelling, and imitating others. This concept of observational learning from the environment has been found to be applicable in programs targeting behaviour change among most populations (Bandura, 1977).

The stages of change theory (Trans-theoretical model), which is a common method for behaviour change modeling is a model of intentional change and focuses on the decision-making process of the individual (Hashemzadeh, Rahimi, Zare-Farashibandi, Alavi-Naeini, & Daei, 2019). This theory was considered suitable in this context because of its relationship with the application of MI in the study. The study addressed students' learning of the maladaptive behaviour of alcohol use and the coping skills they need in order to change their behaviour.

2.2.1 Social learning theory

Albert Bandura developed the social learning theory, which posits that human beings observe, imitate, and model others as they learn behavior, attitudes, outcomes of those behaviors, imitations, and modeling (Bandura, 1995). The theory is based on the premise of classical and operant theories and asserts that "behavior is learned from the environment through the process of observational learning" (Bandura as cited in McLeod, 2016, p. 1). It considers attention, memory, and motivation - acting as a connection between behaviorist and cognitive learning theories and explains behavior as an interaction between cognitive, behavioral, and environmental factors. The theory attributes alcohol dependency to a bleak community related effects (such as poverty and unemployment), modeling of behavior, and paying attention to other persons who are involved in obsessive habits (Akers, 2009; Horvath, Misra, Epner, & Cooper, n.d.).

As postulated by Bandura (1995), human beings learn most behavior through observation and modeling others - such as teachers, parents, or peers. This influences their decision-making strategies, as they consequently take up new behaviors. This theory also emphasizes the role of societal influences, including peer pressure and family systems (Akers, 2009). Additionally, Sremac (2010) asserted that some of the addicts originate from problematic societal backgrounds such as dysfunctional families, past childhood traumas, and problematic parenting - which negatively influence alcohol use. The development of AUD can be associated with such problems.

Since its inception, social learning theory explains the use of substances of abuse among various populations. When applied to the treatment of alcohol users, the social learning theory is aimed at meeting several goals. Such goals include

developing new and healthy networks of friends, learning and practicing new methods of coping, learning refusal skills to deal with peer pressure, and increasing self-efficacy.

Self-efficacy is the trust that one can succeed in a particular situation and is a major component of social learning theory. Bandura (1995) was of the view that self-efficacy is the confidence that one has in his/her ability to coordinate as well as implement what is needed in handling potential circumstances. West and Brown (2013) observed that as self-efficacy increases, the alcohol user is assisted in resisting future alcohol use, since people learn behavior through observing and imitating role models (Foster, Young, & Bamighausen, 2014). Further to this argument, Moos and Moos (2004) postulated that alcohol abuse behaviors happen because of the influence of family members and peers. The youth normally observe their role models using alcohol, and as their expectations of the effects rise, the young person desires to try out the substance. In this view alcohol, abuse is seen as a social problem, which affects the youth at a high rate.

Self-efficacy for an individual means that the person believes they are able to conduct self in a way that helps them to attain their goals in life. Bandura indicated that self-efficacy is usually a learned and mastered new behavior; and that for learning to happen effectively, one needs to be an active participant in behavior change, and to be given necessary resources and social support (Bandura, 1995). Change begins with an individual being able to self-regulate, and to acquire self-regulation; the individual requires self-motivation skills and a strong self-belief in self-efficacy to exercise personal control (Bandura, 1995).

Students who use alcohol may have learned the behavior from parents or peers, and according to Bandura (1995), they can unlearn the behavior and change as

they actively participate in therapy. Bandura defined self-efficacy as what drives an individual to act towards the change of a problem behavior, and perseverance when it is hard to do so. Lack of self-efficacy makes it difficult to manage the situation effectively, even when an individual knows how to go about it or has the necessary skills (Bandura, 1995). Similarly, students' efforts to reduce alcohol-related problems are normally controlled by what they believe they can do (Green & Piel, 2009). Further, Bandura (1995) stated that self-efficacy is grounded on four pillars, namely emotional arousal, mastery experiences, verbal persuasion, and vicarious experiences - all of which contribute to the perceived students' efficacy.

Social learning theory has proved quite useful, in that it easily handles inconsistencies in behavior. It explains how behavior is learned, integrates social and cognitive theories, and is accurate and easy to understand (Green & Piel, 2009). It, however, exhibits some weaknesses in that it is so dynamic, does not explain differences, and lacks a unifying principle.

2.2.2 Stages of change theory

The stages of change theory, which is also known as trans-theoretical model (TTM), was conceived towards the end of the 1970s by two researchers: James Prochaska and Carlo DiClemente (Prochaska & Velicer as cited in Cherry, 2019). It has been used globally to bring change in a wide range of problem behaviours. It conjectures that change happens over time and involves some process. This process happens in stages which include pre-contemplation (no intention to change behaviour in the near future) (Prochaska, Norcross, & DiClemente, 2013), and contemplation (considers making change in the next six months) (Lach, Everard, Highstein, & Brownson, 2004; Prochaska et al., 2013).

The stages of preparation (preparing to make a change) (Lach et al., 2004;

Prochaska et al., 2013), action (actively engaged in making change) (Prochaska et al., 2013), and maintenance (change has been maintained for six months) (Prochaska, Redding, & Evers, 2008) are also included. The last stage is relapse, which is included in recognition that sometimes in the process of change; one may relapse and go back to the original stage before maintenance has been achieved. Individuals working towards change can progress through the stages sequentially or can keep moving back and forth (Norcross, Krebs, & Prochaska, 2011). All individuals are led to move through the stages though the progress pace can differ considerably between persons. The stages of change theory have been used in developing successful interventions for behaviour change.

This study applied TTM since the stages of change used also applied cohesively with the principles of MI therapy in alcohol use. Additionally, changing the maladaptive behaviour of alcohol use requires that the user mediates through several stages. In the process of change, individuals go through intellective and effective procedures culminating in the acquisition of different methods of functioning and bringing to an end the unwanted ones (Lach at al., 2004). The stages of change in the TTM show obvious similarities with MI in that there has been application of both approaches in therapy for substance misuse, as well as for addiction maladies (Miller & Rollnick, 2013; Prochaska et al., 2013).

This theory exhibits strengths in that it acknowledges change depends on time, isolates groups that would appreciate specific interventions, and can account for varied behaviours. It however, does not consider the social context and the fact that human functioning is both too multitalented and multifaceted, hence cannot be classified in discreet stages (Bandura, 1995). Findings by Wilson and Schlam (2004) indicated that TTM shows some ideational, as well as experimental constraints, for

example, challenges in relation to stage description, measurement, and discreteness, together with sequential transition across stages are not yet determined (Wilson & Schlam, 2004).

According to Prochaska et al. (2013), the stages of change begin at pre-contemplation. In this stage, an individual who abuses alcohol denies they have a problem behaviour that needs to change. People around the individual such as other students, lecturers, or significant others are aware that the individual has a problem, but the individual at this stage is not aware of it (Prochaska et al., 2013). At the contemplation stage, the alcohol user agrees that he or she has a challenge, but is not willing to change. Hence, they would require to be given information concerning how to change to new behaviour and how they can work towards the change successfully (Lach et al., 2004). The individual who uses alcohol could be aware that a problem exists due to his or her alcohol use behaviour and may start thinking of ways to overcome the problem; but is yet to decide to take the necessary action (Prochaska et al., 2013).

Individuals begin to get ready to change at the preparation stage. By this time, they have the intention to change and may report some behaviour change, such as delay in or reducing their alcohol use. Since the individual is making small steps towards change, it is crucial to be provided with the necessary support in the change process (Lach et al., 2004; Prochaska et al., 2013). The action stage is where individuals take the necessary steps to change the problematic behaviour. They are already adjusting their behaviours and environment to be able to overcome their current behaviour and form new behaviour. There might be observable behaviour change, such as total abstinence from alcohol. However, coming up with new behaviour requires a lot of commitment and energy. Therefore, there is need to

reinforce, encourage, and support the individuals as they struggle to make the new behaviour work (Prochaska et al., 2013).

The final stage, which is maintenance, refers to that time when individuals have completely overcome their problematic behaviours and are confident of never going back. An example is when students who had been using alcohol can ultimately defeat the urge to drink. At this point, they will live as if they had "never acquired the behaviour, and their new behaviour will become automatic" (Prochaska et al., p. 101). At the maintenance stage, individuals work hard to maintain the desired behaviour they have attained in the process of change (Prochaska et al., 2013). The last stage is relapse, which indicates that the alcohol users may sometimes revert to a former stage before they achieve maintenance. These stages of change were incorporated through the principles of MI during the treatment of alcohol users.

2.3 Brief History of Alcohol

Researchers have held that people from different parts of the world have been consuming alcohol for as long as the human race has been in existence (Freeman & Parry, 2006). The most ancient record of the use of alcohol was in China back in 800 BC. To produce alcoholic substances, the ancient Chinese distilled fruit and grains, fermented them and produced different types of alcohol such as brandy, cognac, and sake. This method of production of alcohol distillation was found only in China over a long period of time and only found its way to Europe in the 11th century AD (Miller et al., 2004).

Alcohol consumption was well regulated in the past, and it was rare for people to use it excessively. In most communities, it was consumed for some particular reason, and its use limited was to specific age groups (Freeman & Parry, 2006). However, this contrasts the present time where alcohol consumption is widespread

and is consumed any time and by members of the communities regardless of age (Ehiemua, 2014). The harmful effects of alcohol have been reported since its consumption began. Initially, such harmful effects were rare occurrences and only happened to a few individuals. With time, more people have exhibited negative effects of alcohol use, and currently, it is common to find people who are disoriented because of the vice.

2.4 Overview and Prevalence of Alcohol Use

Alcohol use has permeated all societies and is now a global concern. According to WHO (2011), alcohol causes significant morbidity and mortality among users all over the world. Most countries in the world have been affected in one way or the other by the devastating consequences of alcohol use. One of the greatest concerns among many stakeholders is a report of an increase in alcohol consumption by teenagers (NICE, 2011). The trend is of alarming, given that the life of the user is severely and negatively affected by early initiation to alcohol use. Excessive alcohol use remains a serious concern all over the world due to health effects on the users. NICE (2011) placed alcohol among the greatest players towards the universal problem of disease. Statistics have shown that 2.1% of the total years of life are lost due to use of alcohol, which is also reported to cause 2.3 million premature deaths worldwide (GBD, 2013).

As reckoned by some studies, alcohol use commences at a young age among Kenyans with the worst affected category being students (Mbwayo, Ndetei, Mutiso, & Khasakhala, 2013). This is in line with the National Council for Population and Development and United Nations Population Fund's (2013) assertion that most people in Kenya are exposed to alcohol use early in life. The number of students with alcohol-related complications is becoming a great concern all over the world. The

United States of America, Office of Management and Budget (USA-OMB, 1997) pointed out that college students stand a higher chance concerning developing difficulties related to alcohol. Additionally, the global report by The United Kingdom, Advisory Council on the Misuse of Drugs (ACMD, 2006) placed university students among the most affected population by alcohol abuse. Also, LaBrie, Pedersen, Lamb, and Quinlan (2007) reported that students with drinking problems are on the increase in nearly all major universities in the world.

A report by SAMHSA (2013) noted that in the US, binge drinking among youth aged 18-25 years was at 39.5%, and heavy drinking was at 12.7%. The lifetime prevalence rate of alcohol use among university students in Turkey was at 54%, indicating that alcohol abuse is a common problem among university students (Tot et al., 2004). Another research done in Sweden among university students indicated that 96% of all students had consumed alcohol during the previous year (Miller, 2004).

In West Africa, a study done among Nigerian undergraduates recorded that 25.8% of respondents used alcohol (Oshikoya & Alli, 2006). Still in Nigeria, alcohol use among the undergraduate students was at a prevalence of 78.4% (Chikere & Mayowa, 2011). A study carried out in Tanzania among college students found a prevalence of 71% with most of the students recording an AUDIT score of above eight (Francis et al., 2014). In Ethiopia, lifetime prevalence of alcohol consumption was found to be 60% among college students (Aklog, Tiruneh, & Tsegay, 2013).

Alcohol abuse in Kenya is not different from the cases already cited, and the effectiveness of treatment models was identified as a key research gap (Andersson, 2009). In its report, NACADA (2015) pointed out that that alcohol use among people aged 15-65 years in Kenya was 14.2% with lifetime usage of 39% in 2007. NACADA also recorded that in 2010, there were many deaths reported in various places in

Kenya due to alcohol use. Additionally, a survey by George, Mugai, Mugai, Mugai, and Nyakwara (2013) revealed that alcohol consumption by those aged between 15-65 years was 40%.

A baseline survey carried out in Daystar University (DU) in 2011 by the DU-Aids and Drug Control Unit (ADCU) showed that 44.8% of respondents were using alcohol (Daystar University, 2011). It is therefore important to evaluate effective preventive and treatment programs that would help address alcohol abuse in Kenya and more so among the young people, who are highly vulnerable. Atwoli et al. (2011) found that alcohol use lifetime prevalence was at 51.9%, while Hassan (2013) found a prevalence of 63.2% among students in Kenya.

2.5 Factors that Expose University Students to Risk of Alcohol Use

University students are known to abuse alcohol because of a myriad of reasons. According to Ndegwa et al. (2017), some of the factors that influence alcohol use in the universities include the age of the user, media, and common mental disorders. Boitt (2016) also ascertained that the living arrangement, marital status, year of study, and family economic status were key factors contributing to alcohol use among students. Other factors, as highlighted by other researchers include minimal restrictions in colleges, social benefits associated with alcohol use, and abundance of free leisure time (Murphy, Correia, & Barnett, 2007).

Modeling by parents and other relatives, peer pressure, stress (Atwoli et al., 2011), easy access (Swahn et al., 2011), and curiosity (WHO, 2013) have been found to determine use of alcohol. Concerning alcohol use in most universities, there are minimal restrictions and students are left to drink at will. However, some of the tertially learning institutions in Kenya restrict alcohol use within their compounds by making the compounds “drug-free zones”. In some other universities, the use of

alcohol is rampant from the places of residence to students' recreational areas. The only restricted places are lecture rooms. Such minimal restrictions give the students a leeway to use and abuse alcohol as they wish within the campuses (Carkaxhiu, Huseyin, Berisha, & Botica, 2011).

Studies have shown that where students live could predispose them to alcohol abuse. Such would include when students live away from parents or guardians, when students live in the university quarters, students who live alone, or with peers in areas around universities (Chaveepojnkamjorn, 2012; Chesang, 2013; Heydari et al., 2015). This is because students experience increased freedom to try out new behaviors away from the monitoring and supervision of parents and family members.

Parents always play an important role regarding their children's alcohol behavior (Rowe & Liddle, 2006). As reported by Kim and Neff (2010), the influence of parents is a major player in adolescent drinking. Results of a survey undertaken in Wisconsin focusing on high school students showed that as per 53.3% of the students, parental influence was instrumental in their intake or no-intake of alcohol (Nash, McQueen, & Bray, 2005).

Researchers have reported that the consumption of alcohol by parents and older siblings, along with and permissive parental mindset regarding alcohol by adolescents portend higher possibilities of alcohol use by young people. Research has also confirmed that children of parents who are lenient with regard to the children's discipline and who do not implement rules for the children are more likely to become regular alcohol consumers as they grow up (Moghe et al., 2011). Additionally, children whose parents abuse alcohol are at a great danger of partaking in numerous inappropriate behavioral challenges, including drinking alcohol (Moghe et al., 2011). Other reports show that many people using alcohol learnt the vice from their parents

and other models who engage in alcohol use.

Mares, van der Vorst, Engels, and Lichtwarck-Aschoff (2011) upheld that parental drinking and perspectives are associated with alcohol use among young people. This was also asserted by another study which indicated that substance use by a parent was a major predictor of early (childhood) use of substances due to modeling (Kaplow, Curran, & Dodge, 2002). Further research also show that the marital status of parents is a risk factor to adolescents' alcohol use, which is due to its effects on their psychological wellbeing (Pappa, 2013; Whitesell, Bachand, Peel, & Brown, 2013). On the contrary, Adekeye, Adeusi, Chenube, Ahmadu, and Sholarin (2015) found out that parental alcohol use was not highly related to young people's alcohol use.

Apart from family influence, peers also contribute significantly in determining whether one will be an alcohol user and the influence from peers has also been perceived as a critical factor in relation to public drunkenness (Kelly et al., 2012). Moreover, having friends who are frequent consumers of alcohol or other substances is also viewed as a forecaster of alcohol consumption among the youth. The social norm approach, which refers to caregivers and peers, is a theory applied in demonstrating the effect social norms have on behavior. As per the theory, humans' actions relate to inaccurate views regarding the way other members of their social group view and respond to issues (Mackie, Moneti, Shakya, & Denny, 2015).

A person experiences peer pressure when influenced by his or her friends to engage in alcohol abuse (Chesang, 2013). Peer pressure is a significant risk factor of alcohol use among university students because most of them end up doing what they see their friends doing (Garnier & Stein, 2002). As such, it is important to realize that there is considerable influence outside the family or home to use alcohol. A study

done in Russia reported that peers influenced most students who used alcohol (Tsvetkova & Antonova, 2013). In agreement with this, studies have shown that students with friends who use alcohol are at a higher risk of using the same due to the influence from those friends (Deressa & Azazh, 2011; Li, Pentz, & Chou, 2002).

A study by Osei-Bonsu et al. (2017) on the frequency of alcohol use and related issues among the youth in Tokorni-Hohoe in Ghana identified peer influence (at 30.8%) as one of the critical factors that influence alcohol use. Atwoli et al. (2011) were of the view that peer pressure appears to be a significant cause of alcohol abuse in Kenya. The study reported that 38.9% of the respondents used alcohol due to peer pressure (Atwoli et al., 2011). Further, in another study on trends of substance use in Kenya, a case study in Mombasa and Nairobi counties concluded that friends introduced 90.0% of the respondents to alcohol (Kahuthia-Gathu, Okwarah, Gakunju, & Thungu, 2013).

The male gender been revealed to use alcohol more regularly and to binge drink more in almost all countries where studies have been carried out and across different ethnic groups (Dhanookdhary et al., 2010). According to Tot et al. (2004), there was higher lifetime prevalence of alcohol use among male students compared to female students in Turkey. Similarly, Hassan (2013) looked at the causes of alcohol abuse among University of Nairobi students and found out that 65.1% of the users were male students compared to 36.3% females.

The year of study has been recorded as a major contributor to alcohol use among students. According to a study done in Nigeria among undergraduate male students, the prevalence rate of alcohol use was different in terms of the years of study (Chikere & Mayowa, 2011). The first-year students had the lowest prevalence of 50.9%, followed by the fourth years at 76.6%, the second years, at 85.6%, and the

third years leading at 86.1% (Chikere & Mayowa, 2011). This indicates that the middle years of college are associated with harmful alcohol consumption (Davoren, Demant, Shiely, & Perry, 2016).

Patterns of heavy drinking have been recorded to be highest in Europe, followed by the Americas. Concerning students, however, heavy episodic drinking has been popularly recorded in Australia, New Zealand, and Europe (Hibell et al., 2009). The researchers recorded that, among students from 36 European countries, about 39% had consumed five drinks or more in a single episode in the past 30 days during the time of the research. Denmark and Malta recorded the highest proportion at 56% while the lowest prevalence was recorded in Iceland at 13% (Hibell et al., 2009). A study by Kypri, Langley, and Stephenson (2005) among New Zealand University students reported tolerance and withdrawal among 81% of the students who were alcohol consumers. Also, 37% of the respondents had experienced some heavy drinking episodes in the previous week, among them, 14% of women and 15% men (Kypri et al., 2005). About 68% of the respondents scored in the hazardous range of (above four episodes) on the AUDIT consumption subscale, and 63% reported binge drinking in the dependent range (score ≥8 on the AUDIT) (Kypri et al., 2005).

According to some studies done in the USA, college students and other young adults have been found to have high rates of alcohol use with most of them showing irresponsible drinking, including heavy episodic drinking and drinking daily (WHO, 2013). Additionally, Hemphill et al. (2011), in a survey conducted in Thailand amongst youth found a considerable increase in alcohol use: from 21.6% in 2001, to 23.5% in 2004, and to 23.7% in 2006. This was an indication of the global status of alcohol use among the youth; a steady rise calling for demands for urgent interventions and control. The overall health of a nation's human resource is key to

the latter's economic development, and therefore nations need to put sufficient focus on the health of their human resources. However, alcohol use is still a foremost risk behavior among students, and has been found to compromise their physical and mental health, sometimes leading to death and compromised national economic development (Oshodi, Aina, & Onajole, 2010).

More studies among students around the world have reported that heavy alcohol use is more prevalent in Australia, Europe, and North and South America as compared to Asia and Africa (Karam, Kypri, & Salamoun, 2007). Another study also reported some heavy episodic drinking of 23.5% among students in China in the previous 30 days (Ji, Hu, & Song, 2012). Concerning students in Thailand, studies reported binge drinking rates of 15.7% and 6.3%, among men and women, respectively (Chaveepojnkamjorn, 2012). Interestingly, Griffiths et al. (2006), in their study found that only 0.8% of students in Hong Kong had any problems related to alcohol use.

In Nigeria, studies have reported that consumption of alcohol has increased, with some university students using it for various reasons. Some of the students consume alcohol so as to remain awake at night, boost sexual performance, enhance self-assurance, and well as lessen stress (Dumbili, 2013). Still, other students engage in periodic drinking and getting intoxicated as a way of establishing social identity (Dumbili, 2013). Binge drinking is common among 15-24-year olds and goes on to reduce as people age (Adekeye et al., 2015).

In Ghana, there are various regulations concerning alcohol use, but these are not fully implemented as young boys, and girls below the cut off age still engage in alcohol use. Elisaus et al. (2015) noted that in Ghana, young boys and girls consumed alcohol at higher rates compared to the whole population. However, Hibell et al.

(2009), asserted that the patterns of drinking vary across countries. Therefore, it is necessary to bring down the levels of alcohol abuse among university students who are pillars of the national economy in any country, hence the need for this current study.

In Kenya, a survey on the consequences of alcohol use in public universities determined that 30% of the student respondents were using alcohol at least once every month (Mahugu, Agak, Kabuka, & Ekitala, 2016). About 30% of the students were binge drinkers, and 49.5% were engaged in hazardous alcohol use. Quite a good number of student users exhibited dependence at 34% (Mahugu et al., 2016). In this regard, therefore, it would be necessary for universities to come up with effective therapeutic programs to address the challenge of high alcohol use among the student population (Mahugu., 2016).

Since alcohol is not prohibited in some institutions of higher learning, students access the substance easily, and this easy access is a major contributor to the use of the substance. Studies spanning different countries (Uganda, Kenya, and Russia) confirm this assertion (Kahuthia-Gathu et al., 2013; Tsvetkova & Antonova, 2013). Available literature has shown that youth who live in or schooled in urban areas are more likely to use substances such as alcohol since it is more easily available and accessible to them in comparison to those youth from the rural settings (Clark, Nguyen, & Belgrave, 2011).

Variations in student alcohol use patterns have been isolated and associated with the drinking environment and also with the individual student characteristics (Alia & Dwyer, 2010). However, not much research has been done to show the level of drinking explained by either of the factors. This, therefore, calls for more studies to determine the various effects of contextual factors in regard to alcohol use. To

increase understanding and prioritization of the mix of specific interventions needed for prevention, Nagy and Fawcett (n.d.) used multilevel analysis to explore the extent to which individual variables and drinking context variables contribute to alcohol consumption per occasion.

The issue of the demand to use alcohol has a relationship with some individual factors, especially the cognitive variables. This is the area which influences the individual's motives to drink. However, the contextual factors mostly influence the 'supply side' or (contextually determined) opportunities to drink. In this regard, the interventions that would suit the demand or supply side would differ substantially. Hence, more insight is needed to establish how vital individual versus contextual factors are for the level of alcohol consumption. This would be helpful in providing an understanding regarding the mix of interventions that would be most appropriate and, hopefully, most successful.

Currently, most companies use the media for advertising their commodities. The advertising of alcohol performs a key role towards maintaining a cultural ecosystem where drinking is considered the norm and molds students' perceptions and attitudes towards the consumption of alcohol. According to Saffer and Dave (2006), alcohol advertising plays a great role in motivating students to drink. The anticipations of the students who have not begun taking alcohol are shaped by certain factors, among them assumptions about drinking; and paying attention to parents, counterparts, in addition to other role models and renowned personalities in the media, who, on a great scale depict the beauty of drinking (Saffer & Dave, 2006).

Exposure to media increased the likelihood of youth experimenting with alcohol (Saffer & Dave, 2006). In the observation of Annor (2016), "media (such as television, movies, billboards, and internet), are known to be very significant in

promoting alcohol use through attractive and mesmerizing manner" (p. 20). Also, Grenard, Dent, and Stacy (2013) noted that a link does exist between exposure to the depiction of drinking on the media and optimistic drinking anticipations by adolescents. Grenard et al. further maintained that there is a considerable superior neural activity related to alcohol use - which affects the youth, especially in the reward system of the brain areas linked to motivation, passion/yearning, and constructive outcome (Grenard et al., 2013).

Chen, Grube, Nygaard, and Miller (2008) also asserted that since young people have sentimental and more optimistic responses to alcohol, they maintain more positive drinking prospects and anticipate greater social support for drinking alcohol. The young people also believe that drinking is more commonplace among peers and adults, and as such, they plan to drink more as adults. Alcohol advertisements, in particular, often portray users as happier, sociable, and beautiful, and this may influence students and young people to use the substances. Advertisements in media are reported to play a major role in influencing alcohol use behavior among students (NICE, 2011). This occurs because the students are easily influenced and unable to resist the temptation to try out alcohol, owing to its being advertised as being cool.

Curiosity is another factor that is connected to the use of alcohol among students. Lindgren, Butterworth, and Prochaska (2010) posited that curiosity has two components which are referred to as exploration and absorption. Previously also, Curiosity has been viewed as related to such attributes as satisfaction in life, life meaningfulness, and enhanced positive affect in life. Relatively, this overlaps with seeking of sensation, which has been linked to alcohol abuse and other addictive behaviors. Different studies among diverse populations have found that curiosity plays a significant role in relation to the commencement of alcohol use (Atwoli et al.,

2011; Kahuthia-Gathu et al., 2013). This happens more to the young people due to their inquisitiveness when it comes to trying out different things in life. Consequently, some of them end up being affected negatively by their alcohol use, resulting in adverse consequences in their lives.

Alcohol has devastating consequences on the users' functioning, including the physical dimension, psychological dimension, academic functioning, occupational area, and social functioning. The effects spread past the users to their families and society in general regarding social, economic, and health implications. Alcohol has adverse consequences on the youth, such as dependence, psychological disorders, disrupted academic and career pursuits, relational problems, and health complications (American Psychological Association, 2012).

Information on the economic influence of alcohol use can offer essential backup for policies. This would help decrease the harm associated with alcohol use. Thus far, much research on the monetary costs of alcohol use has been undertaken globally. According to SAMHSA (2017), the percentage of full-time students, aged between 18 to 22 years and using alcohol were at 53.6%. However, only 48.2% of persons of the same age who were not students used alcohol in the same month.

The SAMHSA report was clear that the cost of alcohol abuse was indeed extensive, signifying the impact of this perilous habit on diverse facets with regard to the alcohol abusers as well on the lives of others around them (Centers for Disease Control and Prevention [CDCP], 2016). The sources of these costs were majorly losses related to "workplace productivity (72% of the total cost), healthcare expenses for treating problems caused by excessive drinking (11% of total), law enforcement and other criminal justice expenses (10%), and losses from motor vehicle crashes related to excessive alcohol use (5%)" (CDCP, 2016, para. 5). Statistics have

indicated that the cost associated with alcohol abuse in the United States was high at $249 billion (which is about $2.05 per drink), with a large percentage (77%) of the costs linked to binge drinking (CDCP, 2016). “Binge drinking is defined as drinking four or more alcoholic beverages per occasion for women or five or more drinks per occasion for men” (CDCP, 2016, para. 3).

As per a CDCP examination of nationwide statistics (from numerous resources) assessing the costs occasioned by heavy alcohol consumption in 2006 (the latest year whose statistics could be found), “the cost of excessive alcohol consumption in the United States in 2006 reached $223.5 billion or about $1.90 per drink” (CDCP, 2011, para. 1). However, the CDCP research failed to examine several further costs, for instance, those resulting from pain and suffering experienced by the heavy alcohol consumers or by other people affected by the former’s drinking (CDCP, 2011). The results could, therefore, have been an underestimate. The study though determined that “excessive drinking cost $746 for every man, woman, and child in the United States in 2006” (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011, p. 516). As earlier reported, the abuse of alcohol in the USA in the year 2010 was responsible for a cost of $249.0 billion and about three-quarters of the amount was incurred through heavy episodic drinking. (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015).

Anderson and Baumberg (2006) observed that alcohol costs England €30billion per year, which includes crime at 60%, lost productivity at 32%, and healthcare at 8%. Similarly, some studies estimated that use of alcohol cost Europe between €79bn and €220bn the USA, which equates to 1.3% GDP (Anderson & Baumberg, 2006). This incredible financial loss show how much nations and individuals endure pain, suffering, and loss of life due to the negative incidents

resulting from alcohol abuse. Valuation of the consequences of alcohol use in 2003 was estimated at €270bn, with other ways of valuing the same harms producing estimates between €150bn and €760bn. However, it has been difficult to assess and estimate other areas of human life affected by alcohol use, and therefore, such data has not been put into consideration (Anderson & Baumberg, 2006). There has not been much study that has evaluated the social benefits of alcohol, although some estimates show some of its benefits to health systems.

Further, alcohol manifests some social consequences, which include subjective or objective effects (Anderson & Baumberg, 2006). These effects can be observed in the individual's social behavior, social interactions, or in the social environment. As far as the students are concerned, their social environments where they learn the drinking behavior include friends or peers. Both the students and their friends influence each other in that, they will select their friends based on their drinking preferences. At the same time, their drinking friends also select them to be their friends based on their drinking patterns and their perceptions in relation to alcohol. Therefore, networks of friends connect on particular matters in regard to alcohol use, reciprocal associations, and practices, leading to peer pressure. Klingemann (2001) stated that "in many cultures, there is a recurrent theme of conflict between familial obligations and drinking with friends" (p. 1).

Alcohol use among students is the principal contributor to death among young people (that is, motor vehicle crashes, homicide, and suicide) in the United States (Grunbaum et al., 2002). Automobile accidents are among the top causes of loss of life for American youth. A study on youth risk behavior revealed that 29.1% of the student population had - in the 30 days preceding the research - at least once, ridden in a vehicle driven either by themselves or by other people who had been drinking

alcohol (Clark et al., 2011).

Researchers have consistently reported the relationship between alcohol consumption and other risky behaviors such as physical attacks, indiscriminate sex, and abuse of other substances (Clark et al., 2011). Further, Clark et al.'s study found a relationship between student alcohol use and increased motor vehicle accidents. There are many cases where injuries sustained from such accidents result in death, suicide, absenteeism, and inferior academic performance (Clark et al., 2011). It is also associated with loss of awareness, memory blackouts, engagement in violence, and recklessness, destruction of property, poor peer relationships, and broken friendships. Clark et al. (2011) also reported that sexual abuse and unprotected sexual interactions which normally result from alcohol use expose youth to STDs, HIV infection, and unplanned pregnancies.

The use of alcoholic beverages is responsible for the collapse of relationships; domestic violence; and deficient child upbringing, including child abandonment and violence (Chesang, 2013). Increased mental issues have been associated with alcoholism. In relation to teenagers, growing up with an alcohol abuser raises their (teenagers) possibility of engaging in alcohol use early in life and acquiring alcohol-associated challenges (Chesang, 2013). A related study in Ghana disclosed that 15.1% of high school students who were found to have taken alcohol, were also found to have gotten intoxicated, as well as gotten into troubles with their friends or family (Kelly et al., 2012)

Most alcohol users experience relational problems with family and significant others (American Psychological Association, 2012), an argument that is supported by Chesang (2013). Alcohol has a direct relationship with domestic violence, and it is associated with spouse/partner and family issues. While the kind and magnitude of

problems emanating from this relationship is often underestimated, studies suggest that family relationships and functioning are affected by alcohol use. Key among observed influences are family dysfunction, assault, and mistreatment (Kelly et al., 2012). The most disturbing issue is that minors experience a lot of negativity resulting from this intricate problem because as children; they are not able to safeguard themselves against the impacts of their parental direct or indirect consequences of alcohol use. Reportedly, children from alcoholic parents suffer deep and permanent scars, in addition to parents' alcoholic behavior.

The study by Kelly et al. (2012) further indicated that in the Western countries such as Australia, New Zealand, Sweden, the United Kingdom and the United States, roughly one child in about 3000 is born with fetal alcohol syndrome, together with higher incidence of complications and disorders related to continued use of alcohol during the pregnancy period. In South Africa, studies have reported several effects associated with the use of alcohol which include socioeconomic effects (such as lack of employment, violence, criminality, indiscriminate sex, problems in family life, and low work performance) (Setlalentoa, Pisa, Thekisho, Ryke, & Loots Du, 2010). In discussing these effects, emphasis is placed on the relationship between the social and economic changes coming from the new patterns of drinking among Africans. These changes arise out of the current urbanization.

Results from a study on violence against women conducted in 1998 in three provinces in South Africa indicated that issues of family abuse are related to using of alcohol by women and that spousal alcohol use led to the rise of conflicts (NICE, 2011). Similarly, a significant relationship between alcohol abuse and spousal violence was reported in a study conducted in Nigeria. From the cases the study evaluated, 51% involved husbands who had stabbed their wives (Obot as cited in

WHO, 2004).

Research findings appear to suggest a correlation between alcohol use and aggression. NICE (2011) reported that there is a strong association between being a victim and perpetrator of violence and alcohol abuse. Also, Gioncola and Corman (2007) indicated that after taking alcohol, some individuals become more aggressive and cause fracas and fights. In the process, they may end up losing personal effects such as phones and other valuables and may cause damage to property. Atwoli et al. (2011) also found that 60% of respondents who used alcohol in Eldoret ended up engaging in fracas, loss and damage after alcohol use. The same study also indicated that 60.5% of the respondents who used alcohol engaged in sexual contact, which they regretted later (Atwoli et al., 2011). This seems to correlate with minimal restrictions for university students who were left alone to manage their freedom. In some communities in Kenya, a lot of alcohol consumption and promiscuity have been reported among those attending ceremonies such as funerals (WHO, 2011).

Apart from the social effects, alcohol use is known to cause serious psychological problems to the users. The consequences of using alcohol on the psychological functioning of the user include alcohol dependence, lack of inhibitions, aggressive behavior and violent outbursts, uncontrolled sex, or lack of interest in sex. Other effects include change in moods, depression, distorted memory, and problems in sensory-motor coordination. Dependence results in the neglecting of responsibilities as well as a fixation on acquiring and using alcohol (American Psychological Association, 2012). Easy accessibility of alcohol among students may result in high use and leads to dependency, as indicated by (NIAAA, n.d.). Dependency makes a person to become dysfunctional and unable to achieve his or her life's pursuits and may result in other complications such as HIV/AIDS (WHO,

2011).

The greatest frequency of alcohol dependence happens in students between the ages of 18 and 25 years (Neighbors, Larimer, & Lewis, 2004). As put forth by Kelly-Weeder, Phillips, and Rounseville (2011), research has advanced "that an earlier onset of alcohol dependence leads to a more severe form of alcoholism, reduced treatment efficacy, and greater relapse rates" (p. 29). Further, Kelly-Weeder et al. reported a high prevalence rate of alcohol use among the ages of 18 to 25 years. Specifically concerning is the rising substantiation "linking adolescent alcohol use to changes in brain development. Adolescence marks a period of rapid brain growth and remodeling particularly in the prefrontal cortex, which is responsible for cognitive flexibility, self-regulation, and evaluation of risk versus reward" (Kelly-Weeder, 2011, p. 30).

One of the most severe indicators of alcohol use is reflected in the academic outcomes, a domain that has been found to be largely influenced by the students' behavior (Ebenuwa-Okoh, 2011). According to Chesang (2013), alcohol use lowers performance and productivity, thus affecting the students' academic performance. Therefore, students who use alcohol greatly risk undesirable academic outcomes. They miss classes more often, fail to hand in assignments in time, and study less - which affects their performance and predisposes them to suspension or expulsion due to violation of rules. Some studies (Arria et al., 2013; El Ansari, Stock, & Mills, 2013) reported that misuse of alcohol negatively affects students' academic performance.

On the other hand, Herny (2010) proposed that poor academic performance may put a student at risk of alcohol use and therefore, deteriorating academic performance may lead students to abuse substances. Similarly, a study by Cox, Zhang, Johnson, and Bender (2007) revealed that students with poor academic outcomes

participated more in alcohol use behaviors than those with good academic achievement. Further, Sutherland and Shepherd (2001) found out that students with low academic achievement were more highly predisposed to alcohol use as opposed to those with high outcomes.

2.6 Effects of Alcohol Use

Together with low academic performance, alcohol use also affects students' health since it causes multiple organ problems (Kelly et al., 2012). The substance, after consumption, is easily absorbed from the stomach through the small intestines into the body and afterwards is distributed to all the organs, tissues, and body cells through the circulation of blood (Cederbaum, 2012). Consequently, the alcohol circulating within the blood gets absorbed into the body by the liver (hepatocytes), and an act that is quick, and then the alcohol gets broken down as a waste called carbon dioxide, water, and into energy (Cederbaum, 2012). "The chemical substances which are excreted through the body kidneys do account for about 95 to 98% per cent of the alcohol a human consumed. The other percentages escaped from the body unchanged through sweat, breath, and urine" (WHO as cited in Annor, 2016).

The health after-effects of alcohol include multiple acute and /or chronic organ damage. One may experience acute difficulties soon after alcohol consumption may, while chronic difficulties happen following extended use. Nonetheless, certain difficulties could be overturned or treated soon after stoppage of alcohol use, while others could be impossible to reverse (Moss, Chen, & Yi, 2014). Some studies (Crego et al.; De Bellis et al.; Medina, Schweinsburg, Cohen-Zion, Nagel, & Tapert; Nagel, Schweinsburg, Phan, & Tapert) have further observed that "magnetic resonance imaging studies have suggested that adolescents with alcohol use disorders have reductions in the size of the hippocampus, a part of the brain involved in memory and

spatial navigation" (as cited in Kelly-Weeder et al., 2011, p. 30)

As put forth by Witt (2011), some research focusing on "brain remodeling" demonstrated that the "overproduction and elimination of synapses in the prefrontal cortex [continues throughout] young adulthood" (as cited in Kelly-Weeder et al., 2011, p. 30). Additionally, Witt noted that excessive alcohol use incidents are likely to disrupt achievement "of mature cognitive and behavioral functioning" (as cited in Kelly-Weeder et al., 2011, p. 30). The effects on the brain occur because the brain is still developing at this age.

The liver, an essential body organ, is understood to be principally affected by alcohol (Cederbaum, 2012). Intense uninhibited drinking can be severely detrimental to the liver, consequently leading to various challenges, for example, liver inflammations, alcohol hepatitis, fibrosis, and cirrhosis (Moss et al., 2014). One of the most prevalent and severe result of continuous alcohol abuse is a disease of the liver known as alcohol liver disease (ALD) (Cederbaum, 2012). It has been categorized into stages, as follows: stage 1, referred to as alcoholic fatty change, is characterized by the build-up of fats in the liver, such that it becomes enlarged (Moss et al., 2014); the second stage entails advancing liver damage, resulting in jaundice (Moss et al., 2014); alcoholic pre-cirrhosis is the third stage, which is characterized by liver damage; and stage 4, which is the last stage, is the lasting liver impairment, commonly termed as alcoholic cirrhosis (Moss et al., 2014).

According to Cederbaum (2012), liver impairment in any of the first three stages can be reversed after 3-4 weeks, provided that one abstains from alcohol. Still, the fourth stage is irreversible, hence fatal. Cirrhosis can portend further problems which drastically affect the internal organs and consequently result in death (Cederbaum, 2012).

Use of alcoholic beverages always tampers with communication pathways in the brain (Hickie, 2009), and affects the brain's normal functioning. These adverse disruptions of the central nervous system result in mood swings and uncalled for behavior among the alcohol users; making it difficult for them to have a clear sense of reasoning, and to operate in a coordinated manner. Drinking also causes structural changes seen in the hippocampus, which is a part of the brain that regulates the learning process (Jacobus & Tapert, 2013). High ingestion of alcohol can cause a lasting impairment on brain growth (Cederbaum, 2012).

Excessive alcohol intake or too much alcohol on a particular time or at any time can lead to impairment of the heart muscles (Jacobus & Tapert, 2013). This has been found to cause complications, such as cardiomyopathy or stretching and drooping of the heart muscles (Jacobus & Tapert, 2013). Other symptoms range from the chronic shortness of breath, heart failure arrhythmias (irregular heartbeats), stroke, and high blood pressure (Jacobus & Tapert, 2013).

Upon its ingestion, alcohol is absorbed mainly into the body from the small intestines, and its effects extend to the inner lining of the stomach (Cederbaum, 2012). This causes acute gastritis and often leads to vomiting. Recurrent harm to the stomach lining can result in hyperacidity, a condition referred to as peptic ulcers, and is prevalent among alcohol users (Tattersall, Apte, & Wilson, 2008). Heavy or prolonged alcohol use is a risk factor for stomach cancer (Tattersall et al., 2008).

Pancreatitis is another condition that is caused by alcohol use. It is an acute inflammation to the pancreas usually triggered by binge drinking; its symptoms present as a piercing pain in the belly; and it can result in an inability to digest food (Tattersall et al., 2008). Lengthy alcohol consumption leads to a reduction in the production of the white blood cells, a disorder that weakens the immune system

(Szabo & Saha, 2015). When the human body produces lower amounts of white blood cells, it becomes weak and is easily attacked by various diseases. Chronic drinkers are, on many occasions, more vulnerable to diseases such as pneumonia and tuberculosis; in comparison to persons who do not engage in heavy drinking (Szabo & Saha, 2015).

Adding to the long list of consequences of alcohol abuse is deficient diet (WHO, 2014), especially in poor communities where alcohol is of low quality and less costly. The welfare of people from such communities may also be negatively impacted by poverty, which leads to a vicious cycle of unrestrained drinking and inadequate health (Rehm, 2011). The wealthy can drink fairly substantial quantities of alcohol, yet experience no direct problems from it since they take care of their diet. Nevertheless, excessive drinking, coupled with rich diet, can occasionally be a precursor to obesity, and associated difficulties such as diabetes and hypertension (Mbwayo et al., 2013).

According to Caan and Belleroche (2002), continued alcohol use over a long time results in damage of vital body organs, body systems, and many health complications to the users. Testino (2008) highlighted health effects associated with large amounts of alcohol intake as increased risk of “alcoholism, malnutrition, chronic pancreatitis, alcoholic liver disease, and cancer” (as cited in Alcohol, n.d., para. 12). Furthermore, chronic alcohol abuse can cause harm to both the central and peripheral nervous systems (Testino, 2008). Such effects include respiratory problems, heart damage, and damage to other body organs such as the liver and lungs.

Increased susceptibility to cancer and exacerbation of preexisting medical conditions has also been recorded (Australian Government, National Health and Medical Research Council [NHMRC], 2009; Mukamal, Chiuve, & Rimm, 2006).

Alcohol and alcoholic products were found to contain cancer-causing properties (WHO, 2013). This is contained in a report by the U.S. Department of Health & Human Services' national toxicology program, in which alcohol was listed as a recognized carcinogen (NHMRC, 2009). The report indicated that in 2006, an estimated 3.6% of all cancer incidents globally were linked to alcohol use, which resulted in 3.5% of all cancer deaths globally (NHMRC, 2009). People who use alcohol, including university students, could experience this exposure to cancer across the populations.

A direct relationship has been noted between increased alcohol use and risky binge drinking among students in universities, with a lot of negative consequences, both to the alcohol users and those that relate with them. Some of these major negative effects include reported mortality at over 25% for young males' mortality, and approximately 10% of young females' mortality (WHO, 2014). Reports have also demonstrated that in Europe, more than one in four deaths among men (aged 15-29 years) and one in every 10 deaths among young women are alcohol-related (WHO, 2014). Globally, the proportion of alcohol that could be attributed to male deaths was highest among the age group of 15-29 years (WHO, 2011).

Schutze et al. (2011) discovered that in Europe, one in 10 of all cancers in men and one in 33 of cancers in women were associated with either past or current alcohol consumption. A report by World Cancer Research Fund & American Institute for Cancer Research (2007) collaborated the evidence and also asserted that alcoholic drinks were known to increase the risk of some cancers which include mouth, pharynx and larynx, esophagus, colorectal (men), and breast (pre- and post-menopause) cancers.

Further research findings have shown that chronic, heavy alcohol use

negatively affects brain development; and causes alcohol dementia, brain shrinkage, physical dependence, and alcoholic polyneuropathy - a condition which is also known as 'alcohol leg' (O'Keefe, Bhatti, Bajwa, DiNicolantonio, & Lavie, 2014). It also increases neuropsychiatric and cognitive disorders and distorts the brain chemistry. Research has also proven that alcohol use leads to changes regarding how the adolescent's brain develops (USA-OMB, 1997). The changes on the brain affect one's neurological development, which could result in other difficulties later in life. The volume of an alcohol user's brain has been found to be subjected to loss through low to moderate alcohol consumption (Verbaten, 2009). As suggested by research, there is also some evidence for a protective effect of low to moderate alcohol consumption on age-related cognitive decline and dementia.

Another study on prevalence and perceived health effects of alcohol use among male undergraduate students in South-East Nigeria identified drowsiness, defective memory, and impaired perception as adverse health consequences of using the substance; and that alcohol is a major risk factor in causing most chronic diseases (Chikere & Mayowa, 2011). Also, according to a study carried out in Eldoret, Kenya, 55.5% of the student respondents using alcohol experienced a variety of medical problems including memory loss and hepatitis (Atwoli et al., 2011).

Alcohol use is also linked to many fatalities and could even cause death to users (Chesang, 2013). A report by CDCP, dubbed "From 2001-2005" asserted that excessive use of alcohol resulted in approximately 79,000 deaths annually in the indicated period. Another 2010 CDC report estimated that in the United States of America, medium and high consumption of alcohol led to 75,754 deaths in that year (White & Halliwell, 2010). In fact, excessive alcohol use is the third leading lifestyle-related cause of death for people in the United States each year. A United Kingdom

(UK) report further indicated that the consequence of taking alcohol is related to the consumer's age, especially as far as mortality is concerned. Low-to-moderate alcohol consumption has been known to increases the risk of death for individuals aged 16-34. Deaths in these cases are caused by an increased risk of cancers, road traffic accidents, liver disease, and other factors. However, it decreases the risk of death for individuals ages 55 and above due to a decreased risk of heart disease (White & Halliwell, 2010).

The 2011 WHO global status report on alcohol and health captured that 2.5 million people die from the harmful use of alcohol each year (WHO, 2011). Besides, a report by NACADA (2015) documented several deaths that were as a result of alcohol abuse in many counties in Kenya. Those that died included youth and even some were university students. It is, therefore, of great importance to give special attention to the issue of the use of alcohol by university students and the youth (NACADA, 2015). Of great importance is the need to come up with effective intervention measures that would curb the extensive damage that is caused by alcohol on young people in order to save the future generation.

Reports have indicated that alcohol induces some psychological disorders, which result in adverse complications. Such complications arise due to continued alcohol abuse (American Psychological Association, 2012), and inhibit alcohol users' ability to function and live normal lives. "Problem drinking has multiple causes - with genetic, physiological, psychological, and social factors all playing a role" (American Psychological Association, 2012, para. 7). However, different persons are affected differently by each cause. For some, psychological attributes, for instance, "impulsiveness, low self-esteem and a need for approval prompt inappropriate drinking" (American Psychological Association, 2012. para. 7). For some people,

drinking is meant to help “cope with or "medicate" emotional problems” (para. 7). Additionally, “social and environmental factors such as peer pressure and the easy availability of alcohol can play key roles. Poverty and physical or sexual abuse also increase the odds of developing alcohol dependence” (American Psychological Association, 2012, para. 7).

Hereditary factors play a role towards vulnerability to alcohol dependence for some people (Ponomarev, Wang, Zhang, Harris, & Mayfield, 2012). All the same, being from a family with a history of alcohol problems does not mean that one will necessarily end up with the same problems. On the other hand, being from a family that does not have drinking problems does not certainly safeguard one from developing drinking problems (American Psychological Association, 2012). The challenge of excessive drinking can prolong itself once one begins engaging in the vice. Severe alcohol consumption can result in physiological changes that leave one with drinking as the sole solution for discomfort. People with alcohol addiction can engage in drinking to reduce or avoid withdrawal symptoms, among other reasons (American Psychological Association, 2012).

Binge drinking, or excessive periodic alcohol consumption, is a contemporary moniker used to refer to the consumption of alcohol with the objective of becoming inebriated over a short time span (Renaud, 2001). A study by Slutske (2005) observed that heavy or binge drinking among college students had become a significant health risk considering the consistent evidence suggesting that students in college are drinking more than their peers who do not attend college. However, it is still not clear whether the said students are more likely to suffer from clinically significant alcohol use disorders (Slutske, 2005). Studies done in Nigeria revealed that depression is common among university students who use alcohol (Adewuya, Ola, Aloba, Mapayi,

& Oginni, 2006).

According to Marshall, Hefferman, & Hamilton (2016), memory impairment is directly related to excessive alcohol, and it results in impaired cognitive ability, which leads to increased failure to carry out the intended tasks later in life. The memory impairment includes forgetting to lock the door or to post a letter on time, and the higher the volume of alcohol that is consumed, and the longer it is consumed, the more severe the resultant memory impairments (Heffernan, 2008).

The brain is one of the organs most sensitive to the toxicity resulting from chronic alcohol consumption (O'Keefe et al., 2014). Alcohol-related dementia has been noted as comprising approximately 20% of cognitive impairment admissions to the mental health facilities in the USA (Peters, Peters, Warner, Beckett, & Bulpitt, 2008). Further, Peters et al. (2008) observed that the use of alcohol, especially when chronic and excessively done, results in serious cognitive decline and a range of neuropsychiatric complications.

Elderly persons have been found to suffer the toxic effects of alcohol on the brain more seriously (Cooper et al., 2009). There are inconclusive assumptions from some studies indicating that if small amounts of alcohol are taken in earlier adult life, the user experiences protection in later life against cognitive decline and dementia (Peters et al., 2008). However, another study concluded that, despite previous suggestions, moderate alcohol consumption does not protect older people from cognitive decline (Cooper et al., 2009).

2.7 Common Comorbidities Associated with Alcohol Use

When compared to adults, the youth have been known to use alcohol more heavily (USA-OMB, 1997), a behavior which makes the habit very disastrous. According to SAMHSA (2013), AUDs are precursors for suicidal ideations. Among the students, psychiatric medical conditions, which include mood disorders, also occur together with alcohol abuse. These are mainly depression; attention deficits, or hyperactivity disorder; anxiety disorders; conduct disorders; bulimia; and schizophrenia (WHO, 2014).

Reportedly, students struggle with how to effectively deal with daily life stresses (Hagen & Nayar, 2014). The stressors may be from school due to a variety of reasons, including assignments and other school-related activities. The students are likely to be stressed from home due to lack of adequate resources resulting in a student struggling with school fees, food, or hostel accommodation fees (Barlow, Smailagic, Huband, Roloff, & Bennett, 2014). Stress could also come from the parents having relationship problems. The students could also be stressed because of having mental or other health-related conditions that could be affecting their performance or other issues that may be a challenge to young people. Studies have shown that students with conditions such as attention deficit hyperactive disorder (ADHD) perform poorly in academics compared to their peers (Barlow et al., 2014) which becomes a challenge to them. This indicates that individuals go through various challenges in life and that different people have diverse ways of coping with the difficulties experienced in their lives, including alcohol use.

According to Shafer (2011), students use alcohol as a way of coping. A study carried out among college students in Eldoret showed that 38.9% of the respondents used alcohol to cope with various problems in their lives (Atwoli et al., 2011).

Therefore, when some students fail to perform as expected in school or experience other setbacks in life, they turn to alcohol due to lack of proper knowledge on how to handle their problems (Shafer, 2011).

Other conditions that have been shown to affect students negatively include the area of mental health, for example, depression, anxiety, and PSTD - all of which could lead to the use of alcoholic beverages (Whitesell et al., 2013). Studies have advanced that persons who heavily consume alcohol present with high rates of major depressive disorder. However, it has not been clearly established whether the drinking - though some evidence suggests that sometimes alcohol use causes the disorder (Sinkiewicz & Weglarz, 2009) - causes such people to use alcohol for self-medication against major depressive disorder (MDD); or increases incidences of the disorder.

Another mental health issue found to be associated with increased risk and is a contributing factor to alcohol abuse is anxiety, which also leads to PSTD (Cheng, Cheng, Huang, & Chen, 2012). It has been observed that individuals with indications of anxiety and depression tend to use alcohol more than those without these symptoms. Similarly, other studies have indicated that individuals with anxiety, PSTD, and depression have been found to use alcohol in a harmful way (Kedzior, Gellersen, Roth, & Zangen, 2015). Students use alcohol so as to overcome challenges and difficulties (Maugo, Ogutu, Amusala, & Abwao, 2012). As reported by Atwoli et al. (2011), 60% of college students used substances to relieve stress.

2.8 Interventions Used to Reduce Alcohol Abuse

According to NICE (2011), excessive use of alcohol can result in serious and significant public health problems. With a significant population globally engaging in alcohol use, the demand for intervention is raising steadily. However, since there is a lack of empirically supported treatments, there is a need to come up with some brief,

innovative treatments to serve those individuals with alcohol disorders (Marlatt & Gordon, 1980).

Some of the available interventions in most countries are mutual support such as AA and Narcotics Anonymous; though these approaches, according to Marlatt and Gordon (1980) may not be empirically or clinically supported for alcohol abusers. Considering the substantial costs associated with alcohol abuse worldwide, empirically supported interventions must be disseminated globally (WHO, 2011).

There has been a considerable focus, by studies, on cognitive-behavioral approaches to alcohol use, with various studies demonstrating the efficacy and effectiveness of those treatments for a variety of addictive disorders across diverse populations (Carroll et al., 2012; Kadden & Litt, 2012; Kadden, Litt, Kabela-Cormier, & Petry, 2007). Currently, many programs in rehabilitation centers offer alcohol users a cocktail of therapeutic approaches, including traditional, evidenced-related care, experimental, and holistic services (Donovan, Ingalsbe, Benbow, & Daley, 2013). The most widely used therapeutic approach in rehabilitation is the AA, which, though not yet acknowledged as a clinical approach, clients to whom it has been administered have been found to remain abstinent through its use. It has been a resource for many, whether used alone or in combination with other approaches.

The Minnesota model, which originated from specialists at a State hospital put together the initial "five steps of AA with lectures on the disease concept of alcoholism and some practical supportive psychotherapy. Central to its concept was the use of staff members who themselves were in recovery from alcohol dependence, along with others" (Anderson as cited in Willenbring, 2010, p. 56). Sadly, the model was designed without the benefit of an empirical foundation. As such, it was not constructed in a manner that would make it promptly transform as a response to

scientific progress (Anderson as cited in Willenbring, 2010). Even though AA works effectively for alcohol users and is quite helpful, not everyone appreciates its style and application. Consequently, AA may not work as the best approach to eradicate the problem of AUD among university students. Other approaches discussed include behavioral couple's therapy (BCT), CBT, and CM.

Behavioral couple's therapy for alcohol use disorders (ABCT) is a therapeutic approach that incorporates into the treatment of an alcohol dependent person's significant other. This method is used for outpatient clients AUDs together with their spouses and works with four assumptions. The assumptions are that intimate partner behaviors and interactions can trigger alcohol use; intimate partners can reward abstinence; a positive intimate relationship could act as a source of motivation to change drinking behavior; and reducing relationship distress would lessen the risk for relapse.

The ABCT therapist uses CBT to work with both the alcoholics and their partners to identify and decrease the partner's behaviors (McCrady & Epstein, 2009). These behaviors reinforce the clients' use of alcohol; improves their coping skills; and provides relapse prevention techniques to enable them to achieve and maintain abstinence.

Some of the major considerations include what a spouse would do in order to support the client's effort to change their alcohol behavior (through reinforcement of positive change and the use of sobriety contracts) and behaviors that bring intimate partners together (through activities and assignments designed to increase positive feelings and improve constructive communication and problem-solving) (Klostermann, Kelley, Mignone, Pusateri, & Wills, 2011). The approach applies behavioral couples' therapy to treat specific disorders. It borrows extensively from

social learning theory and family systems models so as understand and conceptualize human problems. It also draws from interaction-based behaviors, which are rich empirical literature that include communication and problem-solving skills. Connections between individual psychopathology, interactional behavior, and the broader literature on social support are the other considerations on focus.

Behavioural couple's therapy for AUD includes training clients on self-control and skills to enable them to abstain and assist better spouse coping with drinking-related situations, CM procedures, communication, and problem-solving techniques (McCrady & Epstein, 2009). These are drawn from BCT, and they aim at making relationships better. As put forth by Fals-Stewart, O'Farrell, and Birchler (2004), such treatment, as indicated above, has shown to produce a significant reduction in alcohol use; hence enhancing relationships. Although there is empirical backing for the efficacy of ABCT, there has been an indication that it also has some limitations generally because it involves the intimate partner of the client in the treatment. However, this current study is about university students, some of whom may have no such intimate partners.

Another therapy that could be considered to deal with alcohol use is CBT. This approach is geared at work on relapse prevention and at the same time, treat the drinking problem (McHugh et al., 2010). The strategy considers the theory that clients develop maladaptive patterns of behavior such as alcohol abuse. In this case, learning processes are seen to play an important role. The clients taking part in CBT are helped to learn to identify and work on the maladaptive behaviors by use of various skills which they can use stop alcohol use. By the same skills, clients are also able to address other co-occurring problems (Otto, et al., 2014).

Central in CBT is the expectation of enhancement of the clients' self-control through helping them (clients) to develop effective coping strategies. The techniques that are specifically applied include exploring consequences of continued alcohol use (both positive and negative), self-monitoring to recognize cravings early and identify risky situations that might push the client to use alcohol, developing coping strategies for cravings, and avoiding high-risk situations (Otto et al., 2014). Research has indicated that the skills individuals learn through cognitive-behavioral approaches remain after the completion of treatment.

It has been observed, through many large-scale trials and quantitative reviews, that CBT is efficacious for AUDs (Dutra et al., 2008). For example, a meta-analytic review of CBT for drug and abuse and dependence was carried out with 34 randomized controlled trials among 2,340 patients. An overall effect size in the moderate range (d=0.45) was found with effect sizes ranging from small (d=0.24) to large. Debate is, however, on-going concerning the role of CBT in unifying psychotherapy and psychopathology, though there are significant differences between cognitive and behavioral theories (Dutra et al., 2008). CBT uses a set of techniques in the framework of the psychopathological cognitive model, but also uses techniques derived from behavioral models (Dutra et al., 2008). Given this complex relationship, Dutra et al. (2008) recommended that CBT be applied by highly trained professionals who master their theoretical grounds. Given that background, this theory was not considered the most appropriate for the current study.

Contingency management (CM) for AUD is another approach that can be considered. It involves the reinforcement of abstinence through use of tangible reinforcers such as money or other goods which are used to get the client to agree to a drug-free urine toxicology or treatment compliance. According to Petry, Alessi,

Olmstead, Rash, and Zajac (2017), CM treatments have proved to be quite efficacious in improving outcomes of substance-abusing patients. However, it is rarely applied to individuals with AUDs; primarily because of technological limitations in monitoring drinking. Higgins et al. (2000) carefully applied this intervention in a study for people with cocaine use disorders and found positive outcomes.

Implementing modifications of CM has also been observed in cases of combined opiate and cocaine use disorders (Petry et al. 2017) and AUDs and marijuana use disorders (Budney, Higgins, Radonovich, & Novy, 2000). However, CM uses tangible rewards such as money towards the promotion of treatment turnout and/or abstinence from alcohol or drug use. In this current study, this approach may not work, as it is extremely expensive. Therefore, the present study adopted MI, which is a less costly intervention in dealing with alcoholism.

The MI therapy is a therapeutic approach by William R. Miller, a psychologist of American origin. He conceived the approach as he was on a sabbatical leave in 1982, at the Hjellestad Clinic near Bergen in Norway, where for three months he had discussions with a group of Norwegian postgraduate psychologists. It was out of those discussions that the concept MI was born. The approach came about as a response to client and therapist dissatisfaction regarding the prescriptive nature of most addiction treatment therapies. By then, alcohol use was treatment involved confrontation; an aggressive approach generally applied in group and family settings (Sellman, MacEwan, Deering, & Adamson, 2007).

Miller (1983) asserted that confrontational therapies require challenging of clients by showing them (clients) the most potent adverse effects of their current situation and by emphasizing the threat expected out of their behaviour. However, the intention is to create fear in order to trigger the change process. An example of a

confrontational approach is rational-emotive therapy, where the therapist defines the client's irrational cognitions and confronts them, thus putting pressure on the clients to change their cognitions (Miller, 1983). According to Miller, confrontation that induces fear and pressures communication could make it more difficult for the client in terms of behavior change (Miller, Benefield, & Tonigan, 1993).

Although Miller first came up with the idea of the MI intervention in 1983, the first explicit and real description of the therapy was done by Miller and Rollnick in 1995. The two described MI as "a directive, client-centred counselling style for eliciting behaviour change through helping clients to explore and resolve ambivalence" (Rollnick & Miller, 1995, p. 107). They continued to work on the intervention, and in 2002, slightly revised the definition. They defined MI as "a client-centred, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence" (Miller & Rollnick, 2002, p. 25). The definition was again revised in 2008, to "a collaborative person-centred form of guiding to elicit and strengthen motivation for change" (Miller & Rollnick, 2009, p. 137). Miller, in a MINT discussion forum, first announced this in December 2008, ahead of an article that was in press titled "Behavioural and cognitive psychotherapy" (Miller & Rollnick, 2009).

The MI works with the assumption that human beings express fluctuating desires for change, often fluctuating between the level of motivation and ambivalence (Arkowitz & Miller, 2008). In MI, clients are allowed to express their ambivalence as a way of guiding themselves until they resolve their conflicting motivations and facilitating the desired behavioural changes (Labrie et al., 2007). Any attempt to coerce the client to change would be ineffective since it is perceived as taking a side of the conflict that the client is already experiencing (Cronce & Larimer, 2011). The

MI counsellors need to aim at increasing the client's inner motives to change, which is enhanced by his or her (client) own goals and values. The therapy works on assisting clients in deciding to make changes without any external pressure (Arkowitz & Miller, 2008).

Clients are expected to be responsible regarding making personal decisions to change, and even the methods by which they undertake the change. This is important because the responsibility for change has to be solely the client's. The MI's intention is that the client can personally be responsible for arguing for change by eliciting change talk and self-motivating statements. Such involves clear declarations by the clients, which demonstrate that they recognize their need for change, concern for their current position, intention to change, and the belief that change is possible (Miller & Rollnick, 2002).

Notably, a good relationship exists between what people say they will achieve and what they actually achieve (Raistrick, 2007); hence the self-motivating statements. The MI counsellor's role in this process is to help clients clarify their motivations for change; provide information and support; and offer alternative perspectives on the current problem behaviours and potential methods for changing these behaviours (Miller & Rollnick, 2002).

According to Rollnick, Miller, and Butler (2008), MI operates as a collaboration between the client and the therapist. It addresses the problem behaviour in which change is intended: providing a more specific client goal than the client-centred method, which is a broad approach in the consultation. MI involves an active and joint decision-making process between the therapist and the client (Rollnick et al., 2008). Reports have maintained that MI counsellors look forward to arousing clients' motivation and internal resources for change, instead of just giving them what they

might lack (Rollnick et al., 2008). The counsellors achieve this by connecting behaviour change with clients' values and concerns, and this requires that the clients understand their own perspective, by evoking their own arguments and reasons for change (Rollnick et al., 2008).

Additionally, Rollnick et al. (2008) argued that some degree of clinical detachment from outcomes is needed when therapists are practicing MI therapy. This detachment does not mean an absence of caring; it is rather an acceptance that clients can make choices which may not result in the desired health improvements. It is important to recognize that, although sometimes the counsellor may give advice, the client needs to decide on their plan of action. In order to facilitate behaviour change, the counsellor is expected to recognize and honour the client's autonomy (Rollnick et al., 2008).

The MI therapy was for the first time applied as an intervention to cure alcohol and drug users (Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Miller & Rollnick, 2013). The therapy has subsequently been applied in supporting persons to handle chronic diseases, as well as other health problems. Lindgren et al. (2010) used MI as a tool in a worksite program to help employees manage chronic illnesses and found that interventions using MI helped employees increase self-efficacy and motivation, along with other characteristics associated with the therapy. However, Lindgren et al.'s study was conducted outside Kenya. Secondly, it was conducted among worksite program employees. This current study was conducted among university students, specifically MKU students.

Research on MI has also examined the sustainability of the therapy for promoting lifestyle change. Hardcastle, Taylor, Bailey, Harley, and Hagger (2013) evaluated one-year follow-up outcomes after a six-month intervention. Their study

findings demonstrated that the MI intervention group was able to decrease some cardiovascular disease risk factors after the intervention period and maintain the change a year later (Hardcastle, et al., 2013). This signifies a promise that MI is a sustainable, cost-effective technique that can be used in behaviour and lifestyle changes. In the current study, a significant reduction of AUD symptoms among students in MKU was observed, concluding that MI was efficacious.

The MI has been used in various studies of different lengths and frequency of sessions and has been reported to be effective. This brings the question of the intensity and number of sessions that should be applied for effectiveness. In a six-month-long study, the respondents were meeting once a month for 30-minute sessions, and the results indicated that there were no statistically significant results in terms of self-efficacy and anthropometric measurements (Walpole, Dettmer, Morrongiello, McCrindle, & Hamilton, 2013). Other studies with more frequent MI sessions have shown significant results. For example, one study that was found effective had significant results in weight loss. The study involved five MI sessions for 14 weeks (Wong & Cheng, 2013). This may suggest that MI sessions need to be applied within a certain period of each other in order to be effective on the subjects.

2.8.1 Principles of MI therapy

In the current study, emphasis was put on supporting the respondents' self-efficacy. However, MI therapy comprises of five general principles, that is - "1. express empathy through reflective listening, 2. develop discrepancy between clients' goals or values and their current behavior, 3. avoid argument and direct confrontation, 4. adjust to client resistance rather than opposing it directly, [and] 5. support self-efficacy and optimism" (Miller & Rollnick, as cited in SAMHSA, 1999, p. 41).

In MI counselling, expressing empathy is an important defining component of

the approach (Miller & Rollnick, 1991). There is an assumption in therapy that clients achieve behaviour change only if they feel appreciated and recognized. The empathic stance of the counsellor is, therefore, key, and provides the necessary conditions required for the client's successful exploration of self; and it is vital if nay change is to take place (Miller & Rollnick, 2002).

As confirmed by a number of studies, clients are more receptive if the therapist is consistent in a fostering and non-condemnatory manner (Frank & Gunderson; Luborsky et al.,; Siris & Docherty; Ziedonis & D'Avanzo as cited in SAMHSA, 2005). For instance, a study by Petry and Bickel (1999) established that "among clients with moderate to severe psychiatric problems, fewer than 25 percent of those with weak therapeutic alliances completed treatment, while more than 75 percent of those with strong therapeutic alliances completed treatment" (SAMHSA, 2005, p. 102). Though, Petry and Bickel's study did not establish any relationship between "the strength of the therapeutic alliance…[and] treatment completion among clients with few psychiatric symptoms" (SAMHSA, 2005, pp. 102-103). However, these studies are quite old and may not reflect the current situation. Therefore, there was need for another study, hence the current study.

In another study, two in-patient alcohol treatment programs where 137 clients were treated at Veterans Affairs Medical Centre in Dallas, Texas were compared (Kashner, Rodell, Ogden, Guggenheim, & Karson, 1992). Empathic staff who emphasized the development of self-esteem for their clients ran one program. The other program, which was done in America, was a traditional care program, which emphasized confrontation of clients with past failures and current problems and the development of self-esteem (Miller, 2009). At 12-month follow-up, those treated in the first program showed a more than double the abstinence rate compared to the

clients treated in the confrontational program alone.

A research by Miller et al. (1993) reported of another clinical trial that directly compared confrontational therapy and empathetic expression. Alcohol users were randomly assigned to the two therapeutic styles with the same counsellors delivering the therapies. For those assigned to the empathic therapy, a much larger reduction in alcohol use was observed (at 69%) compared to 41% for the confrontational therapy group (Miller et al., 1993). However, when a small sample was used, the difference was not statistically significant.

Another principle of MI involves exploring the expected outcomes of the client's current behaviours and changes to the said behaviours. The principle helps to create an awareness of the discrepancy between the client's current behaviours and his or her broader goals and values, given a supportive and accepting environment. Miller and Rollnick (2002) indicated that in developing discrepancy, the clients elicit movement towards consistency between their behaviours and their core values. The process of developing discrepancies between alcohol use and other more valued aspects of one's life is intimately related to the client's values and belief systems. Specifically, the goal is to elicit from the individual those aspects of his or her life that are important and at odds with current behavioural patterns.

The principle of developing discrepancy also involves creating an awareness of the consequences of the problem behaviour and is an inconsistency between the client's present behaviour and future personal goals (Resnicow et al., 2012). When an individual perceives a discrepancy and gets concerned about the behaviour, motivation for change is created, and the client presents the reasons for change. The change in behaviour is more likely to occur when the individual practising the problem behaviour, and not the therapist recognizes the need for change. The

therapist's responsibility is to encourage the client to provide the arguments for change. The client is then guided to use the MI strategies to help elicit and reinforce change statements. Recognition of the problem, intention, and optimism toward change all serve as reinforcers that increase the likelihood of change.

The clinician in MI therapy is expected to avoid arguments with the client. According to MI, arguments with clients about either the client's addictive nature or problem behaviors should be avoided since such arguments are counterproductive. Clients are usually unhappy with labels such as "alcoholic" or "drug abuser" which sometimes feature in arguments (Miller & Rollnick, 2013). Occasionally, one may be tempted to argue with and confront a client who is either resistant about change, is unwilling to change, is hostile, defiant, or provocative.

The therapist needs to understand that, trying to convince a client and arguing that a problem exists or that the client needs to change his or her behavior could precipitate even more resistance. Clients predictably take the opposite side during such an argument. The arguments can also rapidly degenerate into a power struggle, which does not help to enhance motivation for the benefit of the desired change. When the client and not the therapist comes up with the suggestions and arguments for change, there is an expectation of progress. The aim of the therapists has always been to "walk" with clients or to accompany them through treatment; not "drag" them along. Directing client treatment can be counterproductive.

The other area that the therapist needs to focus on in MI therapy is resistance because the issue of resistance in therapy presents a genuine concern for therapists. This is because it predicts poor treatment outcomes and lack of involvement on the part of the client in the therapeutic process (Resnicow et al., 2012). Some of the clients who present with resistance have been known to be defiant. In some more

constructive viewpoint, resistance is viewed as a signal that the client has a different view of the situation. Therefore, the therapist would be required to understand the client's perspective to make easier progress. Resistance signals the therapist to change direction or actively listen to the client. It offers the therapist an opportunity to respond in a new way that will not be obvious for the client and to take advantage of the situation without being confrontational.

Counsellors should be more reflective other than confrontational so as to avoid client resistance. In a clinical trial, 130 significant others randomly received one of three forms of counselling: Al-Anon facilitation; the confrontational Johnson intervention; and a behavioural therapy, also known as community reinforcement and family training (Miller et al., 1993). The results indicated that, of those in the Johnson approach, 70% refused to go through with the confrontational meeting, confirming earlier findings (Liepman, Nirenberg, & Begin, 1989). Treatment engagement rates did not differ significantly for the Al-Anon and Johnson groups (21%), whereas there was a triple increase in engagement (at 64%) for those receiving behavioural treatment. In another randomized trial (N=278), a modified Johnson Institute intervention offered prior to discharge from inpatient alcoholism treatment had no significant impact on post-treatment abstinence (Ino & Hayasida, 2000).

In an evaluation of the efficacy of rolling with resistance, results yielded mixed results, as some of the studies were more promising than others in dealing with college drinking behaviours. In another research, Walters and Neighbors (2005) reviewed outcome studies using rolling with resistance as a component of alcohol intervention for college students. Their results indicated out of the 13 reviewed studies, 11 reported a significant decrease in alcohol use (77%). Another study posited that rolling with resistance was also effective when done online or through the mail

(Neighbors et al., 2004), as well as in-person (Neal & Carey, 2007).

The next principle that the MI counsellor needs to focus on is the support of the client's self-efficacy, to facilitate behaviour change. This was the focus of the current study, where the researcher aimed at assessing the efficacy of MI among students with AUD. This is an important principle to consider because even if clients are motivated to modify their behaviours, change will not occur unless they (clients) believe that they have the resources and capabilities to overcome barriers and successfully employ new behaviour (Satre et al., 2016). The MI counsellor supports clients' self-efficacy by encouraging the clients to believe in themselves and to acquire confidence so that they can implement their desired changes (Miller & Rollnick, 2002). Self-efficacy is, therefore, an essential aspect of motivation (Bandura, 1986) and has proven to be related to positive outcomes in substance abuse treatment (Solomon & Annis, 1990). Specifically, the provider makes a point to encourage the clients based on the abilities and resources that they (clients) possess.

According to Greenfield, Venner, Kelly, Slaymaker, and Bryan (2012), as clients gain new knowledge, they also increase understanding about addiction and the process of behavioural change. The findings of the study revealed that clients' self-efficacy levels improved after receiving residential treatment for substance use and depression (Greenfield et al., 2012). Similarly, Burditt et al. (2009) argued that there is a direct correlation between relapse rates and a client that has perceived ability to practice new behaviours when changing behaviours becomes challenging. Burditt et al. aimed at measuring the participant's self-efficacy levels, which was useful in determining treatment interventions for improving treatment completion rates. However, Burditt et al.'s study was about treatment completion rates and not the efficacy of MI among students, which was the concern of the present study.

Miller and Rollnick (2012) revealed a solid link between self-efficacy and drug and alcohol use consequences after an array of treatments. If there is a relapse, the highly personal efficient persons are persuaded to consider such relapse as a transitory impediment and hence re-establish command of the circumstance. On the other hand, individuals whose self-efficacy is low can progress to a complete relapse (Kadden & Litt, 2012).

A study by Kuerbis, Armeli, Muench, and Morgenstern (2013) focused on the rest of the MI principles indicating that one only needs to learn and master the intervention skills of MI and hence increase self-efficacy. In this respect, the researcher in the current study focused on the principle of supporting the respondents' self-efficacy among students exhibiting AUD. Mainly, this resulted from the fact that understanding the effects of utilizing MI as a treatment determined that the intervention is beneficial for increasing the client's self-efficacy for AUD treatment. Increase of self-efficacy when one is practicing MI skills motivates the person and helps him or her to avoid relapse because of psychological cues. This helps the person to make progress toward a healthier lifestyle. Many clients are not able to raise the necessary levels of self-efficacy to complete treatment and therefore utilizing the MI intervention is beneficial for accomplishing self-efficacy aspirations (Kuerbis et al., 2013). However, there is a paucity of studies regarding MI among students in universities.

Despite self-efficacy having been found efficacious in some cases in predicting the amount of substances used, some studies showed varied findings on the same. A study by Maisto, Connors, and Zywiak (2000) reported that there was significant self-efficacy prediction of alcohol use for a time of up to one year. On their part, Dolan, Martin, and Rohsenow (2008) found a higher self-efficacy prediction of

less alcohol use only after three months. In a study on the effectiveness of step-down continuing care, following residential and intensive outpatient care, Han, Gfroerer, and Colliver (2009) results showed little evidence to support the continuation of care. However, they found a strong association between self-efficacy levels and the amount of subsequent alcohol and crack cocaine use, and the level of participation in continuing care (Han et al., 2009).

In their report, Stephens, Wertz, and Roffman (1995) posited that self-efficacy was a major predictor of abstinence post-treatment and the levels of use of marijuana. These findings were collaborated by Hayaki et al. (2011). Additionally, Greenfield et al. (2012) found a significant association between self-efficacy expectancies and some frequency-related outcome variables during inpatient alcohol use treatment. These variables include the likelihood of drinking; time to first drink; and time to relapse during the year following treatment.

Similarly, for outpatient treatment, Allsop, Saunders, and Phillips (2000) found that alcohol users post-treatment self-efficacy predicted relapse time. In their study, Vielva and Iraurgi (2001) determined that alcohol users who were more confident in their ability to use alcohol were more likely to remain abstinent for six months after treatment (Romo et al., 2009). Likewise, Brown et al. (2002) observed that those users who worked on their confidence positively in high-risk environments were more likely to persist, had both fewer days of use during follow-up, and had reduced alcohol severity.

Among untreated heavy alcohol users, Kadden and Litt (2012) found that higher self-efficacy was associated with reduced frequency of binge drinking episodes over a three-month period, but not to the change in total alcohol consumption. Other studies have reported a negative relationship between self-efficacy and relapse to

alcohol use (Walton, Blow, Bingham, & Chermack, 2003). According to Ilgen, McKellar, and Moos (2007), among alcohol patients in residential treatment, the strongest predictor for a twelve-month abstinence during discharge was found to be a high level of self-efficacy. This suggested that it was clinically important for the alcohol-dependent clients to develop a high degree of abstinence self-efficacy.

Moos and Moos (2004) also observed a higher self-efficacy, with additional minimal reliance on avoidance coping and predicted remission from drinking after as long as three years. However, those with less self-efficacy were more likely to relapse. Researchers also observed that among adolescents with substance use and psychiatric disorders, there was a protective role of self-efficacy against relapse (Ramo, Anderson, Tate, & Brown, 2005).

A relationship between self-efficacy and subsequent alcohol use - in amounts used and frequency of drinking - was reported by Lozano and Stephens (2010) with the report concluding that self-efficacy was a predictor of both the frequency and volume of drinking. Similarly, Solomon and Annis (1990) found a strong association between self-efficacy and the level of subsequent alcohol consumption. However, the study did not predict the frequency of drinking. In some studies on dual-diagnosis among clients presenting with both substance use and mental health disorders, mixed results were established. Although in one such study, the self-efficacy predicted the amount of substance use at follow-up (Warren, Stein, & Grella, 2007). Elsewhere, self-efficacy was found to predict the length of time of abstinence (Tate et al., 2008). In consideration of the various studies, there is evidence that the principles of MI therapy have been applied with success. This current study sought to find out whether MI therapy would be efficacious on AUD among MKU students.

Research has indicated that the role of self-efficacy may at times be complicated and may entangle with other effects. For example, Ilgen et al. (2007) reported that the results of therapy interacted with baseline self-efficacy to predict the outcome. As such, clients with low self-efficacy would only need to establish a strong relationship with their therapist, to have their alcohol use outcomes comparable to clients who had high self-efficacy. Researchers have reportedly found a recognizable relationship between self-efficacy, the amount of alcohol used, and the frequency of alcohol use. Still, the relationship was regulated by intellectual disabilities, thus interfering with the performance of self-efficacy (Bates, Pawlak, Tonigan, & Buckman, 2006).

Though self-efficacy predicts treatments among the users of alcoholic beverages, some studies show different outcomes. As per a report by Demmel, Nicolai, and Jenko (2006), the effectiveness of refusal to drink was not related to post-treatment alcohol use. However, most of the studies that tested self-efficacy indicated an association with the outcome, though some studies failed to show similar results (Kadden & Litt, 2012). There is a lack of understanding, though, as to whether self-efficacy could be considered a mechanism for behaviour change in alcohol abuse, or it is merely an epiphenomenon of behaviour change that has already occurred.

2.9 Conceptual Framework

Miles and Huberman (1994) defined a conceptual framework as a graphical explanation of the main variables to be studied. It shows the key factors, constructs, or variables; and the assumed relationship between them. The variables in this study are diagrammatically illustrated in Figure 2.1.

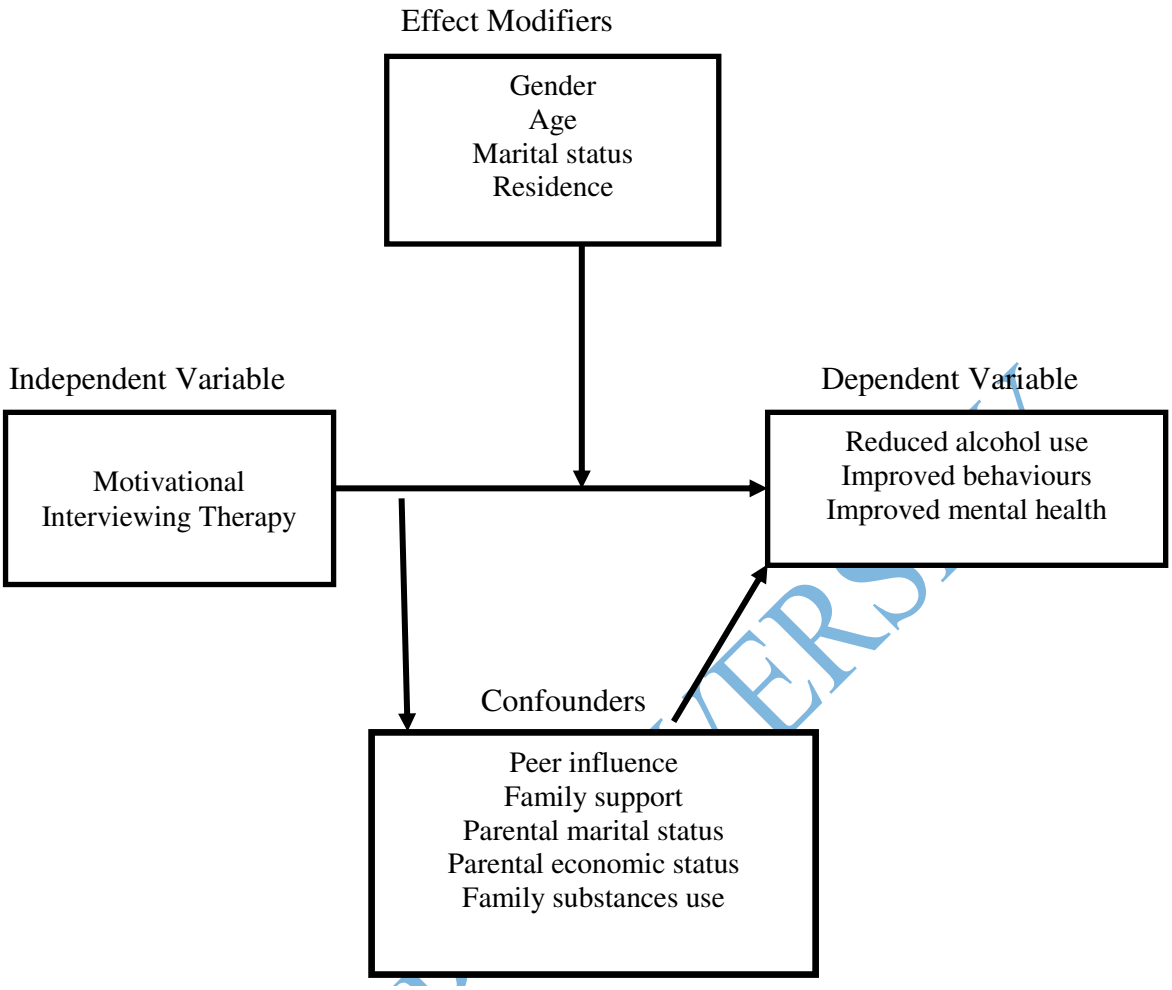

Figure 2.1: Conceptual Framework
Source: Author (2020)

In this study, the independent (exposure) variable was MI therapy, which was used to treat university students who presented with AUD. The independent variable (exposed) was the students using alcohol. The expected outcome was reduction or cessation of alcohol use and improved mental health and improved behaviour by the students exposed to the intervention. Effect modifiers were age, gender, residence, and marital status; while the confounders were peer influence, family support, parental marital status, parental economic status, religiosity, and family substances use.

2.11 Summary

In this chapter, literature related to the topic of study has been discussed, and research gaps have been identified. Through the literature review, methodological, geographical, contextual, and time gaps were identified. The theoretical and conceptual frameworks have also been described in this chapter. The next chapter discusses the methodology that guided this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the research methodology used in this study is discussed. The focus is on the research design, study population, sample size calculation, sampling procedure, inclusion and exclusion criteria, methods of data management, data presentation, data analysis, as well as the ethical considerations.

3.2 Research Design

Research design is a well-thought-out plan for collection and analysis of data to provide the information being sought (Kothari, 2013). In order to conduct ethical research, the researcher's initial responsibility is to develop a sound research design. According to Boeije (2010), a sound research design is one that would meet the research goals, address the practicability of the research, and meet the ethical standards.

The research design that was adopted for this study is a quasi-experimental design, which is a type of experimental study design (Creswell, 2015). A quasi-experiment is an empirical design used to estimate the causal impact of an intervention on its target population without random assignment. This design is favoured for a study that seeks to establish change as an outcome of the intervention, especially in psychological researches.

Quasi-experimental designs identify two groups with similar characteristics at baseline. The groups are the experimental and the control which, in this study were Nairobi Campus and Nakuru campus, respectively. The control group is not given treatment and therefore captures the outcomes if no intervention is applied. In this study, the design assisted in helping to assess the efficacy of MI therapy on AUD

among students in MKU, Nairobi Campus. The design was appropriate for answering research questions about the efficacy of MI as an intervention for reducing alcohol use among students.

The quasi-experimental design adopted in this study gave two groups (experimental group and control group) a pre-test (baseline measure), followed by treatment (for experimental group), and then post-test measure after successful completion of treatment. The post-test measure may come at between two months and three months after treatment is complete. For this study, the post-test was done two months after treatment. The experimental group received MI therapy while the control group received CAU. Data was obtained from the undergraduate students who were exposed to the psychological assessment instruments and the structured questionnaire. The study involved an initial pre-assessment at baseline followed by two assessments at the midline after two months and at end line two months later.

In this study, the quantitative data collected created a platform for comparing the results of one group with another. The advantage of quantitative data collection is that numbers captured were subjected to computerised arithmetic procedures that provide ways of dealing with large data sets. This method also allowed for the use of statistical techniques that permit research hypotheses to be rigorously tested (Dermen, Ciancio, & Fabiano, 2014).

In sum, the aim of quantitative data collection in research is to determine the extent of how variables under the study affect each other in a given population. This method employs precise definitions, data collection methods that are objective, and an analysis that can be replicated to prove or disprove findings in a systematic and cumulative manner (Dermen et al., 2014).

3.3 Study site

Mount Kenya University is one of the Kenyan private universities which has 11 campuses in East Africa. The campuses include Thika (main), Nairobi, Nakuru, Mombasa, Eldoret, Kakamega, Kisii, and Kitale. The university also has open and distance-learning centres spread over several regions. The history of MKU dates back to 1996 when the Thika Institute of Technology was founded as a computer outreach program. "In the year 2000, the Institute developed into a commercial college offering management and computer training programs" (MKU, n.d., para. 2). Later on, during the same year, the institute was recognized as a "full-fledged institution of higher learning and granted a full registration approval" (MKU, n.d., para. 2) by the Ministry of Education, Science and Technology (MKU, n.d.). In 2006, the Commission for Higher Education (CHE), currently Commission for University Education (CUE), "approved the institute's request for collaboration with JKUAT to offer both diploma and degree programs" (MKU, n.d., para. 5). The university was awarded a Charter on 26 January 2011. Currently, the university has 11 schools and 52,000 students. The schools are Business and Economics, Health Sciences, Education, Pure and Applied Sciences, Social Sciences, and Law. Others are Postgraduate studies, Computing and Informatics, Film, Creative and Performing Arts, Engineering and Hospitality, and Travel and Tourism (MKU, n.d.).

This study was conducted at MKU's two campuses of Nakuru and Nairobi in Kenya. Nairobi campus, which was the experimental site is located in Nairobi city while Nakuru campus, which was the control is located in Nakuru town in Nakuru County. Homogenous purposive sampling was applied to select the campuses (Saunders, Lewis, & Thornhill, 2012) since the campuses have similar characteristics and the students in both campuses are reported to use alcohol (Rimbere & Kabunga, 2017).

3.4 Target Population

In this study, the research population was the total number of students in MKU, which was 52,000. The target population was 22,000 students from both Nakuru and Nairobi campuses. Homogeneous purposive sampling was applied to select the two campuses since they have similar characteristics, and they both have students who abuse alcohol (Rimbere & Kabunga, 2017). The counselling departments in the campuses have also reported disciplinary cases arising from the use of alcohol among students. The accessible population for this study was the 9,000 students, aged 18-26 years from three schools of the two campuses. Three schools: School of Business, School of Education, and School of Social Sciences from the two campuses were targeted. The three schools were chosen because they have more students in the evening, and regular modes of study, the modes that were the focus of this study. Similarly, according to Rimbere and Kabunga (2017), the schools have students who were reported to abuse alcohol. The age of 18-26 years was targeted because it is the age group of most undergraduate students. This information is summarized in Table 3.1.

Table 3.1: Accessible Population

Campus	School	Number	Gender	Total
Nairobi	Business	1085	Male	23
			Female	62
	Social Sciences	1900	Male	260
			Female	640
	Education	1750	Male	74
			Female	76
Nakuru	Business	600	Male	200
			Female	400
	Education	1665	Male	30
			Female	35
	Social Sciences	2400	Male	250
			Female	150
Total Accessible Population		9000		9000

3.5 Sample Size

The nature of research is such that all the elements or cases that might be affected by the research objective or hypothesis cannot be included in a single study; hence the need for a sample derived from a study population (Polit & Beck, 2012). In this respect, sampling was applied in this study since the study population was large. Sampling is the process of selecting cases that are representative of an entire population with a view to making inferences about the population under study (Polit & Beck, 2012). Sampling helps researchers to achieve statistical conclusions, validity and to generalize their study findings and results.

In this study, the researcher set an eligibility criterion, that is, inclusion and exclusion criteria, before the sampling of the study participants. Additionally, a reconnaissance survey of the students' database was carried out to establish the population of persons with AUD. The sample of the study was determined using the following formula by Casagrande, Pike, and Smith (1978):

$$N = \frac{\left(Z_{\frac{\alpha}{2}}\sqrt{2\bar{p}(1-\bar{p})} + Z_{\beta}\sqrt{P_A(1-P_A)+P_B(1-P_B)}\right)^2}{(P_A - P_B)^2}$$

Where:

$P_A = 0.36$

$P_\beta = 0.20$

$\bar{P} = \frac{0.36+0.20}{2} = 0.28$

Therefore:

$$N = \frac{(1.96\sqrt{0.56(1-0.28)} + 1.28\sqrt{0.36(1-0.36) + 0.20(1-0.20)})^2}{(0.36 - 0.20)^2}$$

$$= \frac{(0.4032 \times 1.96) + (0.480 \times 1.28)^2}{}$$

(0.0256)

= 103.59 =104

N= 104

Total sample size was 104.

Where:

N= Sample size

Z= 95% Confidence Interval

P= Preference rate

α = Level of significance

Since some studies on alcohol have reported high attrition rates (Svendsen et al., 2017), this study assumed a 20% attrition rate, and therefore 21 participants were added. The total sample size, thus, was 104+21=125.

3.6 Sampling Techniques

Through the sampling procedure, the researcher selects the subjects who would be used to gather the information representing the target population under consideration (Bogopane, 2013). The sample size for the current study was 125 participants, that is, 63 participants in the experimental group (Nairobi campus), and 62 (Nakuru campus) in the control group. However, after the recruitment, 20 participants withdrew, and only 105 participants remained and took part in the actual study.

The schools of Business, Education, and Social Sciences from both Nairobi and Nakuru campuses were selected using homogeneous purposive sampling. The goal was to achieve a homogeneous sample of participants who shared similar characteristics, such as age and alcohol use. In this case, a homogenous sample was chosen based on shared characteristics among the MKU campuses.

The study also adopted a purposive sampling method in selecting the study participants from the different schools and the various genders. Purposive sampling aimed to select cases that have adequate information, which, after the experiment, helped answer the research questions of the study (Patton, 1990). The study observed the changes that occurred among the experimental and the control groups after using the instruments in consideration of the inclusion/exclusion criteria.

3.6.1 Inclusion and exclusion criteria

The respondents consisted of undergraduate students between 18 and 26 years of age from the schools of Business, Education, and Social Sciences of MKU Nairobi and Nakuru campuses. The potential participants were taken through alcohol use assessment and those who recorded a scale of eight and above on AUDIT, qualified for inclusion. Those included also willingly took part in the research. Students who were in the sampled schools but were below 18 and above 26 years of age were excluded. Postgraduate and diploma students were also excluded together with those who were unwilling to participate in the study.

3.7 Data Collection Instruments

Data collection instruments are the documents a researcher uses to gather information from the participants of the study (Patton, 1990). In this study, four assessment instruments were used for data collection. These were AUDIT, Beck's Anxiety Inventory (BAI), Beck's Depression Inventory (BDI), and a social-demographic questionnaire. The instruments correlate in the assessment of alcohol use behaviour on the mental health functioning on the participants in that it was also critical to observe how both depression and anxiety affect the intrinsic motivations and values of the participants. MI was used to help the participants identify the

conflicts between their values, learn how the conflicts were contributing to their (participants) distress and to alcohol use, and move toward resolving the conflicts.

The AUDIT, which was developed by WHO to help in identifying individuals with harmful use of alcohol (WHO, 2001) indicates that participants scoring eight and above have harmful alcohol use. According to WHO (2001), the AUDIT has been tested all over the world and has been found valid and consistent for use in different populations because of its cross-national standardization. Reinert and Allen (2007) reported a Cronbach alpha of AUDIT of 0.74 and 0.80% among college students. According to Monti et al. (2005), AUDIT has been adapted and used with a Kenyan population and results showed good reliability and validity for the tool (Chersich, Bosire, Kingola, Temmerman, & Lutchers, 2014; Kuria et al., 2012).

The other tools that were administered to the participants are the BAI and the BDI. The two instruments were necessary since they measure the severity of anxiety and depression, respectively; conditions that impact on the participants' ability to resolve ambivalence and realize personal goals. Beck, Epstein, Brown, and Steer (1988) found the BAI to be psychometrically sound with the internal consistency ranging from .92 to .94. BAI has been used at a nursing college in Kenya to measure anxiety among students with positive results and was, therefore, dependable for use in this study (Muriungi et al., 2013).

The BDI is an instrument that measures the characteristic attitudes and symptoms of depression (Beck et al., 1988). In this study, the instrument helped to establish comorbidity between AUD and depression. In the comorbid case of AUD and depression, through the establishment of a trusting relationship, empathic MI helped establish a safe, open environment that was conducive for treatment.

Beck's Depression Inventory is a 21-item, self-report inventory, and takes about 10 minutes to complete. The instrument is adequately easy to understand as posited by researchers (Beck et al., 1988). Researchers have put the internal consistency for the BDI as ranging from .73 to .92 with a mean of .86. With an alpha coefficient of .86 and .81 for psychiatric and non-psychiatric populations, respectively, the instrument demonstrates high internal consistency (Beck et al., 1988).

A researcher developed socio-demographic questionnaire was used to capture the socio-demographic information of the participants and their environment. The researcher pretested the questionnaire to ensure its validity and reliability. The questionnaire captured such information as age, gender, year of study, duration in college, religion, and peers using alcohol. The marital status of the parents, whether the parents use drugs/alcohol, economic status of the parents, sibling in schools, and status of the participant's fees payment, among other details were also captured. The tool captured mediating variables, which were useful in the outcome.

3.8 Data Collection Procedures

After obtaining an approval and ethical clearance from the Ethics Review Board of Daystar University, the researcher sought a permit from the National Commission for Science, Technology and Innovation (NACOSTI), to enable her to undertake the research. Afterwards, clearance was sought from MKU to allow the researcher to access the potential participants. The instruments which included the AUDIT, BDI, BAI, and SDQ were availed, and were self-administered, with the help of research assistants. After filling the assessment instruments, the participants were directed to a container where they dropped the filled instruments in order to maintain anonymity.

As the respondents returned the completed assessment instruments, the researcher and the assistants checked to confirm if the instruments had been appropriately filled. The treatment procedures used in the study were as described in Figure 3.1. Group therapy was applied for the participants found to have AUD after assessment. During the intervention, the researcher and the counsellors, who were the research assistants, used MI therapy to guide the participants through the stages of change, in order to assist them to stop or reduce alcohol use and invariably help them improve their behaviours.

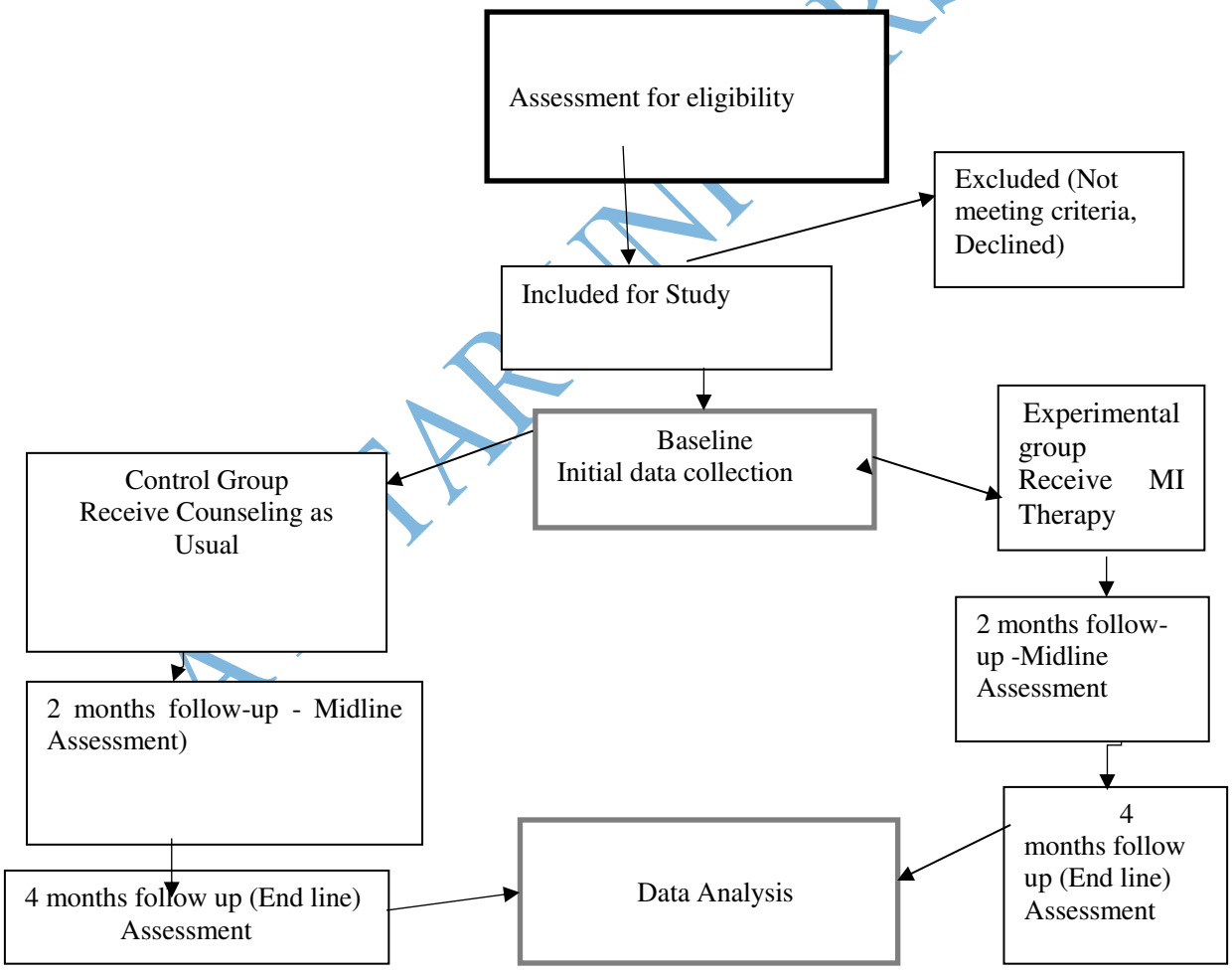

Figure 3.1: Data Collection Flowchart
Source: Author (2020)

3.9 Pretesting

Pretesting simply refers to trying out the instruments to be used in data collection to gauge their ease of use: clarify ability by the research participants to understand the instrument and confirm clarity of the instruments' requirements (Cohen, Manion, & Morrison, 2007). Pretesting is done before the onset of research so that if there is a need to revise the instruments, the same can be done before the actual process of data collection begins. It is carried out on a small sample of participants from the target population (Grimm, 2010).

For this study, the pretest was self-administered and served as a deciding factor on whether the tools would be successful or not in meeting the research objectives (Hilton, 2015). During pretesting, the researcher was also able to evaluate the time that would be taken in administering the instruments. The researcher carried out the pretesting of the research instruments on 12 students (10%), which is the minimum number of participants recommended. (Wurzbach, 2002). The 12 students were identified from the Schools of Business, Education, and Social Sciences from Thika Campus (MKU), which has similar population characteristics as the actual population of the study.

Similar schools were used in both the pretest and the study so as to ensure authenticity. The pretest sample constituted 10% of the actual study sample (Connelly, 2008). The reliability index of the instruments was calculated using Cronbach's alpha to establish internal reliability. The reliability analysis for the pilot study yielded an alpha of 0.969 for all the 51 items (questions) for the SDQ, while the AUDIT, BDI, and BAI had 0.888, 0.935, and 0.962, respectively. The reliability coefficient accepted was = 0.7, and therefore, the instruments were reliable.

3.10 Data Management and Analysis Plan

3.10.1 Data management

Data management refers to the process of controlling the information generated during the research process. It involves the organization of data from its entry to dissemination and to the point of achieving the intended results (Richards & Whyte, 2011).

After collecting all the instruments from the respondents, the researcher checked to ensure that all the instruments were completed satisfactorily. All the incomplete questionnaires were put aside. The researcher then cleaned the data and corrected the mistakes. Data entry clerks under the supervision of the researcher and the biostatistician double entered the data from the experimental and control groups in the computer using MS-Access. To reduce errors, the entry screens were programmed to accept only the codes within the predetermined range.

The researcher cleaned, validated, and exported the data into the Statistical Package for the Social Sciences (SPSS), Version 23, backed it up to avoid loss, and then stored it securely. This involved keeping the data in a locked cabinet in the researcher's office in order to limit the access and prevent interferences from unauthorized individuals so as to safeguard the data against loss and/or damage.

3.10.2 Data analysis

Analysis involves working out certain measures and finding the various patterns of relationships that exist (Kothari, 2013). It is the process of transforming raw data into usable information, which involves examining what has been collected and making deductions and inferences to reach conclusions or to make decisions (Gelman et al., 2014).

In this study, data analysis was done using SPSS, version 23. Categorical variables were summarized as frequencies with corresponding percentages, while continuous variables were summarized as means and the corresponding standard

deviations in case normality assumptions were held. Where applicable, variables were summarized as median with corresponding interquartile range (IQR). The empirical method was used is the Shapiro Wilk's test for normality and baseline characteristics were compared between groups. Association between categorical variables were assessed using Pearson's Chi-Square test, while the relationship between dichotomous variables and continuous variables was assessed using the Wilcoxon two-sample test in case of violation of normality assumptions otherwise two-sample test.

The change in the outcome was assessed using the analysis of variance (ANOVA) method. This method was deemed ideal because of the need to adjust for the variability in the levels of alcohol use scores among the participants while at the same time establishing differences, if any, between groups and within groups over time. The change, as well as the corresponding 95% confidence limits, were reported. The results were presented using tables and graphs. Figure 3.2 illustrates the data management and analysis plan.

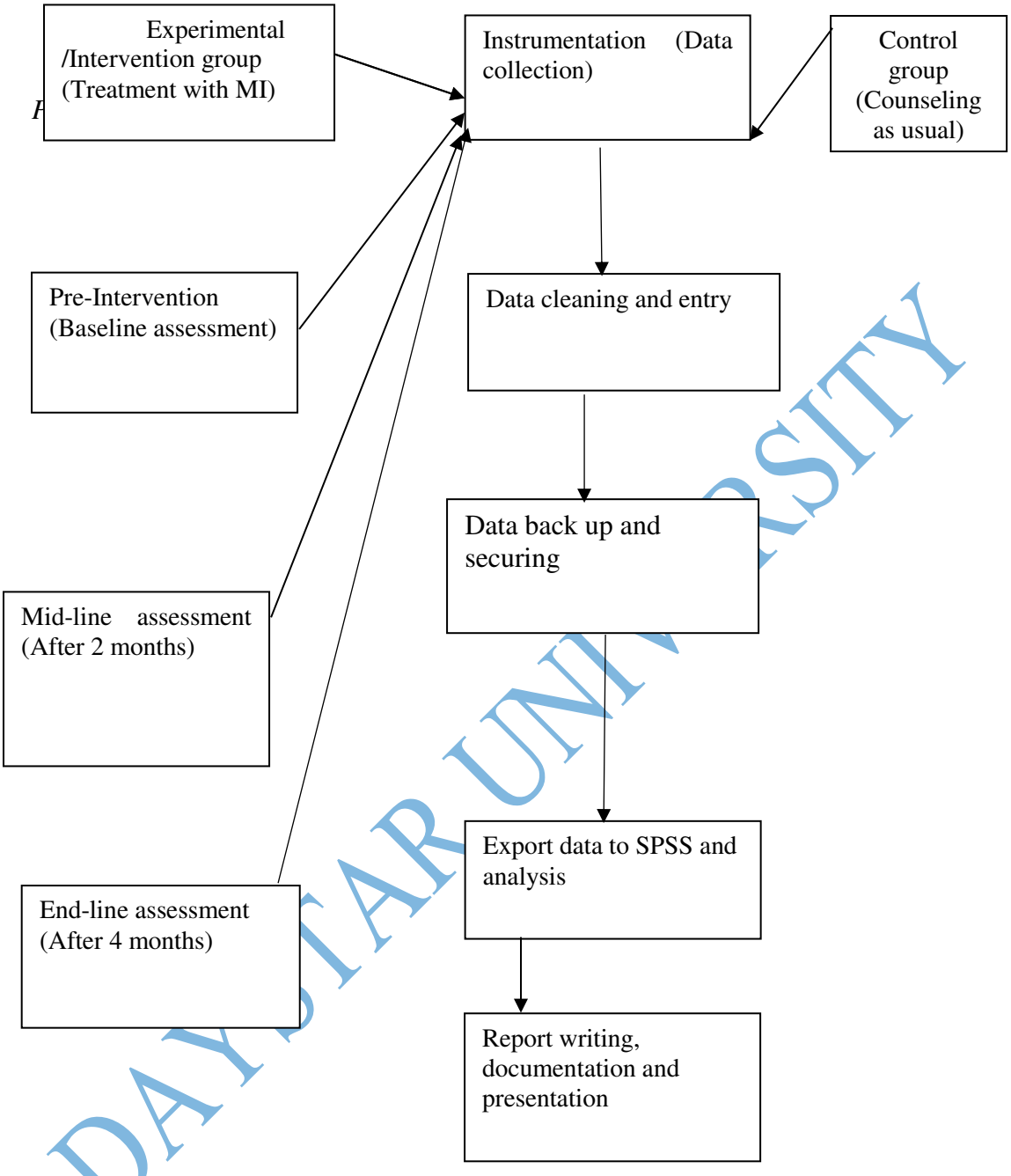

Figure 3.2: Data Management Plan
Source: Author (2020)

3.12 Ethical Considerations

Ethics is the concern of how the researcher conducts the study. Since this research involved human subjects, ethical concerns were paramount, and the

researcher considered the best way to guide research behavior when carrying out the study (Corey, Schneider-Corey, & Callanan, 2011). The behavior has to be accepted morally and legally to avoid any negative effects on the human subjects (Corey et al., 2011).

Before embarking on the data collection and implementing interventions, the researcher sought the approval of the authorities concerned to conduct research and to use the standardized instruments. Therefore, permission was obtained from the Ethics Review Board of Daystar University, after which the researcher sought the approval of NACOSTI. The researcher then sought approval from the Directorate of Research; Mount Kenya University, as the university was the site of the study. In order to access the respondents, the researcher liaised with the various concerned MKU personnel who included campus directors, associate deans of students, and campus counsellors. The counsellors were involved in the research by assisting in giving therapy and intervention to the students.

The researcher ensured that the respondents voluntarily participated in the study by exposing them to informed consent. The respondents were therefore required to choose whether to participate in the study or not, and none was coerced or lured in any way to participate against their will. Before engaging the respondents, the researcher informed them about the research, explaining its benefits to them. The researcher truthfully informed them all the details concerning the research in order to help them make an informed choice on whether to participate or not. This helped to avoid issues that could arise later concerning the participants' involvement in the research (Corey et al., 2011).

Another aspect the researcher put into consideration was the issue of

confidentiality and anonymity. The researcher appreciated the sensitivity of the information that the students gave about their personal lives, and therefore, there was the need to observe confidentiality throughout the research. The respondents were assured that no information obtained from them would be revealed without their consent. The respondents' identities were kept anonymous throughout the study by making sure that not real names, but codes were used. The researcher assured the participants verbally, and in writing, that confidentiality would be maintained during and after the research. Besides, the risks and benefits associated with their participation in this research were made known to the participants.

The researcher also considered the issue of beneficence and non-maleficence during the study. Therefore, forethought was given towards maximizing good and minimizing any harm that could occur during the study period. The wellbeing of the respondents was well secured, to take care of any physical or psychological harm, including stress, embarrassment, boredom, or fatigue. The researcher explained to the respondents that should they desire to withdraw from the research, they would be allowed to do so without any repercussions. After data collection and analysis, the researcher and research assistants debriefed the respondents, who were also allowed access to the results of the research. Each respondent was treated fairly and equally since the issue of justice was observed.

3.13 Summary

This chapter has presented the research methodology that was used for this study. The study used a quasi-experimental research design. The research data was collected using psychological assessment instruments and a structured questionnaire, which means that a quantitative approach was utilized. The target population for the

study was MKU undergraduate students. The respondents were selected purposively, and the sample comprised 125 students who were engaged in alcohol use. Throughout the study, ethical considerations were observed and maintained. The collected data was then analysed using SPSS, Version 23. The next chapter covers the presentation of the collected data and also the analysis and interpretation of the same.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter focuses on the presentation, analysis, and interpretation of the data collected from the students of MKU, Nairobi and Nakuru campuses. The data was analyzed using SPSS, version 23 and presented using tables and graphs. A total of 258 students, who were between 18-26 years of age, were screened for the study. They qualified and were enrolled at baseline. A total of 125 participants (who formed the study sample) were found to be alcohol users and were categorized into two study groups, namely Experimental (n=63) and Control (n=62) and took part in the prevalence phase of the study. However, 20 participants, (7 from the experimental group and 13 from the control group) dropped after recruitment, and 105 participants remained and took part in the study. Their age bracket was grouped into three categories as follows: Ages 18-20 years, 21-23 years, and 24-26 years. Most of the participants were aged 21-23 (158, 62.2%) compared to those aged 24-26 (59, 23.2%) and those aged 18-20 (37), 14.6%) respectively. The assessments were done at baseline, mid-line, and end-line on specific population characteristics. At the prevalence study phase, data was collected from all the screened 258 participants.

The experimental group received MI therapy while the control group received counseling as usual (CAU). After three months (midline) and six months (end-line) of intervention for the participants enrolled in the experimental group and counseling as usual for those in the control group, the assessment was done on alcohol use using AUDIT, depression using BDI, and anxiety using BAI. This was done to establish changes between and within the study groups after intervention.

Table 4:1 presents the frequency of key socio-demographic characteristics of the study participants at baseline using the researcher-generated questionnaire.

Table 4.1: Background Characteristics of Participants at Baseline

Variables	Frequency	Percent	Mean	Std. Deviation
		Participant's Gender		
Male	127	49.2	1.5078	.50091
Female	131	50.8		
		Participant's Age		
18-20	38	14.5	2.0898	.61015
21-23	159	62.1		
24-26	61	23.4		
		Participant's Year of Study		
1st Year	52	20.2	2.5543	1.06909
2nd Year	74	28.7		
3rd Year	69	26.7		
4th Year	63	24.4		
		Participant's Mode of Study		
Regular/Day	239	93.0	1.0700	.25571
Evening	19	7.0		
		Participant's Marital Status		
Single but dating	15	3.8	2.0127	.29866
Single but not dating	231	91.1		
Married	12	5.1		
		Participant's place of Residence		
On-campus	24	8.5	2.4085	.64312
Off-campus	104	42.1		
Living with family members	130	49.4		
		Marital status of Participant's Parents		
Married	188	73.4	1.4320	1.46833
Divorced	5	1.6		
Separated	12	4.7		
Single Parents	25	9.8		
Widow	25	9.8		
Widower	3	.8		

As seen in Table 4.1, the participants' gender indicated that the female participants were higher (131, 50.8%) as opposed to male participants (127, 49.2%). The mean age for gender was 1.5078, with a standard deviation of .50091. In terms of age distribution, participants aged 21-23 were higher (159, 62.2%) compared to those aged 24-26 (61, 23.2%) and those aged 18-20 (38, 14.6%). The mean age among the participants for prevalence study was 2.0898 with a standard deviation of .61015.

As regards the participant's year of study at the prevalence phase, the frequency for participants whose year of study was 2nd was higher (74, 28.7%) compared to 3rd year (69, 26.7%), 4th year (63, 24.4%) and 1st year (52, 20.2%). The year of study mean was 2.5543 with a standard deviation of 1.06909. Distribution of participant's mode of study showed that regular/day mode of study had higher frequency (239, 93.0%) as opposed to evening mode of study (19, 7.0%). The mode of study mean was 1.0700 with a standard deviation of .25571.

Further, the distribution of participant's marital status showed that the frequency of single but not dating was higher (231, 91.1%), compared to single but dating (15, 3.8%), and married (12, 5.1%). The marital status mean was 2.0127, with a standard deviation of .29866. The distribution of participant's place of residence indicated that participants living with family members were higher (130, 49.4%) compared to participants who lived off-campus (104, 42.1%) and those who lived on-campus (24, 8.5%). The participant's place of residence mean was 2.4085 with a standard deviation of .64312. Distribution of marital status of participant's parents showed that the frequency of the married participants was significantly higher (188, 73.4%) compared to single parents (25, 9.8%), widow (25, 9.8%), divorced (12, 4.7%), separated (5, 1.6%), and widower (3, .8%). The marital status of participant's parents mean was 1.4320, with a standard deviation of 1.46833.

4.2. Prevalence of Alcohol Use among Students in MKU

Table 4:2 presents the key socio-demographic characteristics of the participants at the prevalence phase of the study and alcohol use disorder.

Table 4.2: Frequency: Key Demographic Factors and AUD among the Participants

	Total (%)	Participants Diagnosed with AUD		Chi-Square Test		
		≤ 7 = Low Risk	≥ 8=High Risk	value	f	Sig.
Participant's Gender						
Male	127(48.8)	97 (37.9)	28 (10.9)	6.39	1	.00
Female	131(51.2)	117 (45.7)	14 (5.5)	9	9	
Participant's Age						
18-20	38 (14.6)	30 (11.8)	7 (2.8)	.223	2	.89
21-23	159(62.2)	132 (52.0)	(10.2)		4	
24-26	61(23.2)	50(19.7)	9 (3.5)			
Participant's Year of Study						
1st Year	52 (20.3)	41 (16.0)	11 (4.3)	6.07	3	.10
2nd Year	74 (28.9)	65 (25.9)	9 (3.5)	9	8	
3rd Year	69 (26.2)	60 (23.4)	7 (2.7)			
4th Year	63 (24.6)	48 (18.8)	15 (5.9)			
Participant's Place of Residence						
Campus	24(8.5)	15 (6.9)	5 (2.1)	1.24	2	.53
Off-Campus	104(42.3)	84 (35.9)	15 (6.4)	4	7	
Living with family	130(49.1)	99 (41.5)	18 (7.7)			
Participant's Marital Status						
Single but dating	15 (3.8)	7 (3.0)	2 (0.9)	.147	2	.92
Single but not dating	231(91.0)	175 (75.2)	37 (15.8)		9	
Married	12 (5.1)	10 (4.3)	2 (0.9)			

As demonstrated in Table 4.2, the participants who scored 7 or less on the AUDIT were considered to have low risk to AUD, hence they were casual and social drinkers whereas; those who scored 8 and above were diagnosed to exhibit AUD. The distribution of participants' gender scores showed that male participants who had AUD were higher at 10.9% as opposed female participants who had AUD at 5.5%. Chi-square test indicated that the distribution of participant's scores on AUDIT among gender frequency was significant (p=0.009). This seems to suggest that the frequency of participant's gender on AUDIT scores were irregularly distributed.

The distribution of AUDIT scores among participant's age shows that frequency of participants who were considered to have AUD was higher among

participants aged 21-23 (at 10.2%) compared to those aged 24-26 (at 3.5%) and those aged 18-20 (at 2.8%). The chi-square test showed that there was no significant difference in the distribution of AUDIT scores among the participants' age group (p=0.894). The indication here is that distribution of AUDIT scores among participants' age group was steady. Regarding participants' year of study, the frequency of participants whose scores on AUDIT was considered to exhibit AUD was higher among 4th year participants (at 5.9%) compared to 1st year students (at 4.3%), 2nd year (at 3.5%) and 3rd year (at 2.7%). Two participants did not indicate their year of study. Chi-square test indicated that the distribution was not statistically significant (p=0.108). This is also an indication that there was no significant difference in the distribution of alcohol consumption among the participants' year of study.

Moreover, the distribution among participants' place of residence shows that the frequency of participants whose scores were considered to indicate AUD was higher among participants who lived with their family (at 7.7%) compared with those whose place of residence was off-campus (at 6.4%), and those living in campus hostels (at 2.1%). The distribution was statistically insignificant (p=0.537). Pertaining participant's marital status, frequency of participants who were considered to exhibit AUD was higher among single but not dating (at 15.8%) as opposed to single but dating (at 0.9%), and likewise among the married participants (at 0.9%). The chi-square analysis showed that there was no significant difference in the distribution of AUDIT scores among the participants' marital status (p=0.929).

Table 4.3 presents the prevalence of alcohol use among the participants at MKU, to determine which, the AUDIT was used.

Table 4.3: Prevalence of Alcohol Use among the Participants at MKU

Variable	Frequency	Percent	Mean & Std. dev.
≤7= Low-Risk Alcohol Consumption. Non-clinical Alcohol Use	215	83.7%	
≥8 = High-Risk Alcohol Consumption. Alcohol Use Disorder	43	16.3%	.16 ± (SD: .37)
Total	258	100%	

The participants who were considered to have low risk in developing AUD or a high risk to AUD based on their scores was determined. Those who scored 7 or less had low risk and were seen to exhibit non-clinical alcohol use, whereas those who scored 8 and above were considered to present with AUD. The frequency of participants who scored 7 or less was higher (215, 83.7%) compared to those who scored 8 and above on AUDIT (43, 16.3%). Therefore, the prevalence of AUD among the students of MKU was 16.3%. The prevalence of AUD mean was 16, with a standard deviation of .37 (see Table 4.3).

Figure 4.1 presents the frequency of AUD among the participants at MKU.

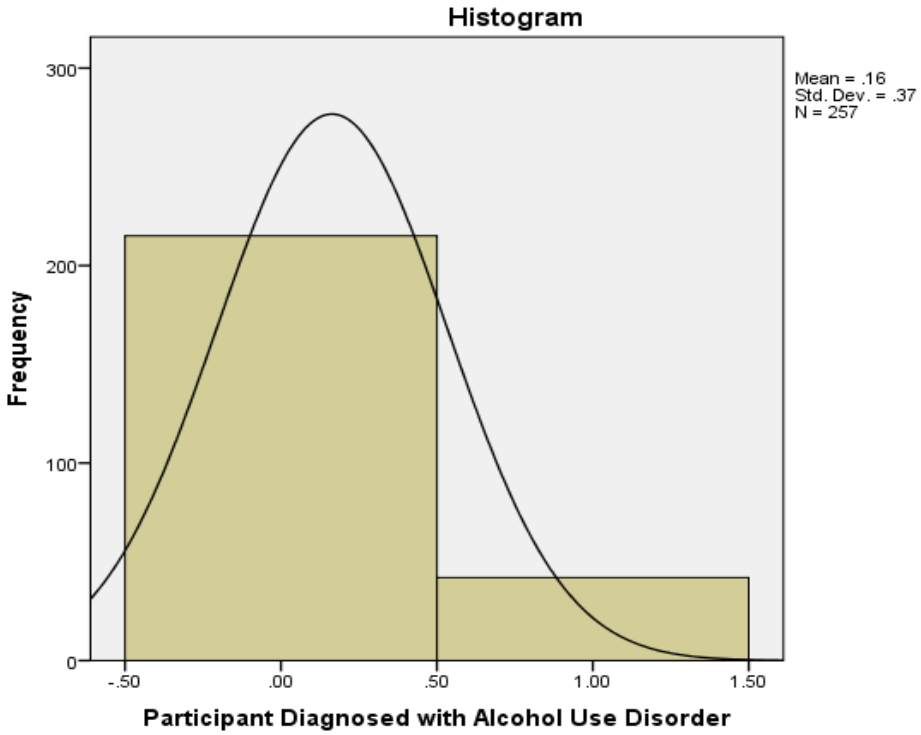

Figure 4.1: Prevalence of AUD among the Participants

As illustrated in Figure 4.1, participants who scored 7 or less were higher compared to those who scored 8 or above using AUDIT psychometric instrument. The prevalence of AUD among the participants was 16.3%, and its means as indicated on the figure was with a standard deviation of .37.

Table 4.4 displays the frequency of alcohol products used by the participants.

Table 4.4: Frequency of Alcohol Products used by the Participants

Variables	Frequency	Percent	Mean & Std. Dev.
Tusker	7	5.3	
White Cup	3	2.3	
Guinness	5	3.8	
Heineken	1	.8	
Jameson	4	3.1	
Viceroy	1	.8	15.56 ± (7.188)
Johnnie Walker	2	1.5	
Williamson Lawson	3	2.3	
Famous Grouse	2	1.5	
Smirnoff Vodka	7	5.3	
Guarana	12	9.2	
Snapp	4	3.1	
Wine	12	9.2	
Chang'aa	5	3.8	
Others	11	8.4	
Multiple choice	52	39.7	
Total	131	100	

The frequency of participants who use multiple alcohol products was higher at 39.7% compared to those who used Guarana at 9.2%, wine at 9.2%, Tusker at 5.3%, Guinness at 2.3%, Heineken at 8%, Jameson at 3.1%, and Viceroy at .8%. It was also higher than Johnnie Walker at 1.5%, Williamson Lawson's at 2.3%, Famous Grouse at 1.5%, Smirnoff Vodka at 5.3%, Snapp at 3.1%, Chang'aa at 3.8% and others that were not mentioned at 8.4%. The kind of alcohol products that the participants use had a mean of 15.56 with a standard deviation of 7.188 (see Table 4.4).

Frequency of alcoholic drinks used by the participants

Figure 4.2 shows the kind of alcoholic drinks used by the participants.

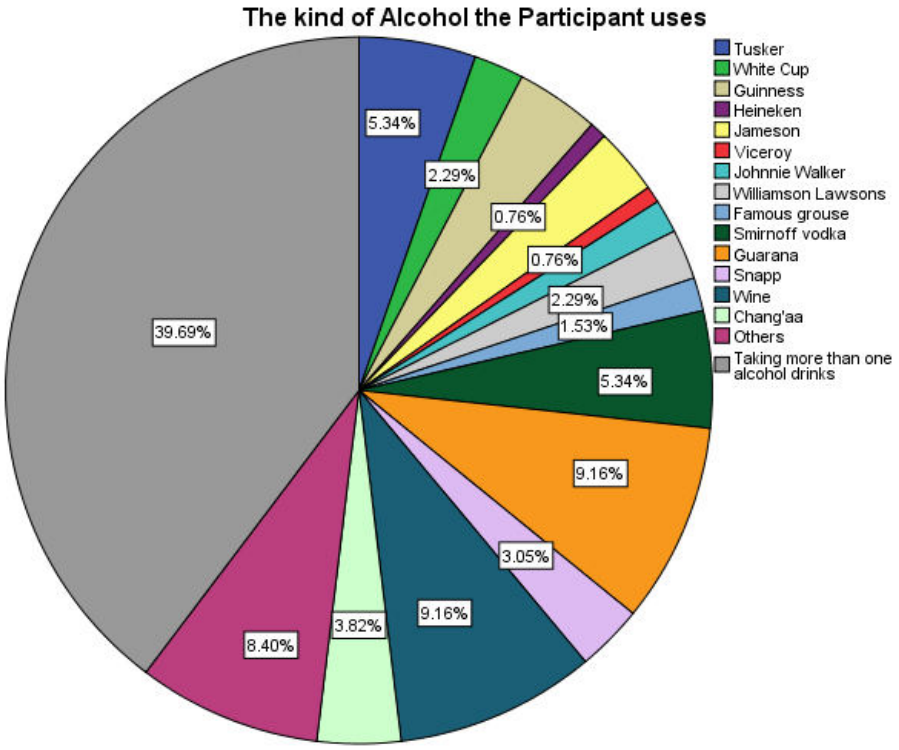

Figure 4.2: Frequency of Alcoholic Drinks used by the Participants

The participants who use multiple alcoholic drinks had the highest frequency at 39.7% (as shown in Figure 4.2).

Background Characteristics of Second Phase of the Study.

The second phase of this study focused on presentation, analysis, and interpretation of data collected from a sample of 105 participants which constituted 40.7% out of the 258 students who participated in the prevalence study. The study focused on a sample size of 125 participants. However, 7 dropped from the experimental group, and 13 from the control group of the study. The participants were purposively grouped into two research groups, namely the experimental group (n=56, 53.3%), and control group (n=49, 46.7%). The research groups mean was 1.4667 with a standard deviation of .50128. All the recruited samples participated in the study from the beginning to the end. Data collection was done at baseline, midline, and end

line.

Among the participants, those aged 21-23 years were 56.7% compared to those aged 18-20 years (17.1%), and 24-26 years (at 26.0%). The mean age among the participants was 2.0865 with a standard deviation of .65523. There was no significant difference in the mean age between the experimental and the control group (p=0.179). In terms of gender, most of the participants were male (59.6%) compared to the female participants (40.4%). The participant's gender mean was higher (1.4038 with a standard deviation of .49304. There was no significant difference in the distribution of participants' gender across the groups (p=0.718). However, when the measure of association Eta squared was calculated to find the mean for age and gender; it was found to be 2.0848 with a standard deviation of .47476. The distribution in mean difference between age and gender was not statistically significant (p=0.091) either.

Assessments were done at baseline, midline, and end line. The assessment at baseline focused on background characteristics such as socio-demographic factors, participant's year of study, mode of study, marital status, place of residence, who pays the school fee, parents' occupational status, and marital status among other factors. The baseline assessment also concentrated on finding out the severity of depression and anxiety of the participants as well as the intensity of alcohol consumption by the participants. On the other hand, assessment at midline and end line focused on recurrent experiences of the participants on alcohol use, depression, and anxiety. Data at baseline and midline was analyzed for comparison with the end line data so as to establish the effects of the intervention on the participants in various groups. The final assessment was conducted using SPSS version 23 to analyze the data collected using a socio-demographic questionnaire, AUDIT, BDI, and BAI.

Table 4.5 presents the distribution of key socio-demographic characteristics at baseline.

Table 4.5: Frequency of Key Socio-demographic Characteristics at Baseline

Variable	Frequency	Percent	Mean	Std. Deviation
Participant's Year of Study				
1st Year	23	21.9	2.5524	1.12644
2nd Year	31	29.5		
3rd Year	21	20.0		
4th Year	30	28.6		
Participant's Gender				
Male	63	59.6	1.4038	.49304
Female	42	40.4		
Participant's Mode of Study				
Regular/Day	95	90.5	1.0952	.29495
Evening	10	9.5		
Participant's Age				
18-20	19	17.1	2.0865	.65523
21-23	59	56.7		
24-26	27	26.0		
Participant's Marital Status				
Single but dating	7	4.1	2.0306	.33534
Single but not dating	89	88.8		
Married	9	7.1		
Participant's Place of Residence				
On-Campus Hostels	14	14.7	2.3474	.72594
Off-Campus	38	35.8		
Living with Family	53	49.5		
Who Pays Participant's Fees				
Parents/Family Members	85	82.4	1.3137	.70332
Scholarship	4	3.9		
Self-Sponsored	16	13.7		

In terms of participants' year of study, the frequency of participants in the 4th year was higher (30, 28.6%) compared with that of those in 3rd year (21, 20.0%), 2nd year (31, 29.5%), and 1st year (23, 21.9). The year of study mean was 2.5524 with a standard deviation of 1.12644. As regards the participants' gender, the distribution of male participants was higher (63, 59.6%) as opposed to female participants (42, 40.4%).

The mean gender at baseline was 1.4038, with a standard deviation of .49304. The distribution of participants' mode of study indicated that the number of

participants whose mode of study was regular/day was significantly higher (95, 90.5%) than that of those whose mode of study was evening (10, 9.5%). The mean mode of study at baseline was 1.0952, with a standard deviation of .29495. The participants were grouped into three age categories: 18-20, 21-23, and 24-26. The distribution of participants aged 21-23 was higher at 56.7%, compared to those aged 18-20 at 17.1%, and the ones aged 24-26 at 26%. The mean age was 2.0865, with a standard deviation of .65523 (see Table 4.5).

Additionally, concerning the participants' marital status, the participants whose marital status was single but not dating were significantly higher (at 88.8%) compared to the ones in the category of single but dating (at 4.1%), and married participants (at 7.1%). The mean marital status of the participants at baseline was 2.0306, with a standard deviation of .33534. In terms of the distribution of participants' place of residence, the frequency of participants living with family members was higher (at 49.5%) compared with those who lived off-campus (at 35.8%) and those living in on-campus hostels (at 14.7%) (refer to Table 4.5)

The mean of participant's place of residence was 2.3474, with a standard deviation of .72594. Similarly, the frequency regarding the sponsors of participants' fees showed that participants whose fees was paid by their parents or family members was higher (at 82.4%) as opposed to those on scholarship (at 3.9%), and the self-sponsored (at 3.9%). The mean was 1.3137 with a standard deviation of .70332. (see Table 4.5).

Table 4.6 outlines the distribution of key socio-demographic characteristics across the study groups.

Table 4.6: Participants' Key Socio-Demographic Characteristics (Inter-Group Distribution)

Variables	Total %	Participant's Research Group		Chi-Square Test		
		Experimental	Control	Value	df	Sig
Participant's Gender						
Male	63 (59.6)	34 (32.7)	28(26.9)	1.235	1	..6
Female	42(40,4)	21 (20.2)	21 (20.2		28	
Participant's Age						
18 – 20	19 (17.3)	8 (7.7)	10 (9.6)		22	..0
21 – 23	59 (56.7)	38 (36.5)	21 (20.2)	7.800	20	
24 – 26	27 (26.0)	9 (8.7)	18 (17.3)			
Participant's Year of Study						
1st Year	23 (21.9)	6 (5.7)	17 (16.2)		33	..0
2nd Year	31 (29.5)	16 (15.2)	15 (14.3)	13.467	04	
3rd Year	21 (20.0)	17 (16.2)	4 (3.8)			
4th Year	30 (28.6)	17 (16.2)	13 (12.4)			
Participant's Mode of Study						
Regular/Day	95 (90.5)	55 (52.4)	40 (38.1)	8.339	11	..0
Evening	10 (9.5)	1 (1.0)	9 (8.6)		04	
Participant's Marital Status						
Single but dating	7 (4.1)	2 (2.0)	2 (2.0)		22	..0
Single but not dating	89 (88.8)	51 (52.0)	36 (36.7)	8.993	11	
Married	9 (7.1)	0 (0.0)	7 (7.1)			
Participant's Place of Residence						
On-Campus Hostels	14 (14.7)	2 (2.1)	12 (12.6)		22	..0
Off-Campus	34 (35.8)	15 (15.8)	19 (20.0)	16.571	00	
Living with family members	53 (49.5)	34 (35.8)	13 (13.7)			
Who Pays Participant's Fees?						
Parents/Family Members	85 (82.4)	50 (49.0)	34 (33.3)		22	..0
Scholarship	4 (3.9)	0 (0.0)	4 (3.9)	7.610	22	
Self-Sponsored	16 (13.7)	5 (4.9)	9 (8.8)			

The data depicted in Table 4.6 indicates that 32.7% of the male participants were assigned to the experimental group, while 26.9% were in the control group. One participant did not indicate their gender. For the female participants, the frequency assigned to the experimental and control groups was equal, at 20.2%. Chi-square test showed that the gender distribution across the study groups was insignificant (p=0.628), thus implying that the distribution of gender frequency across the study group was almost equal, without much difference.

The participants' age distribution showed that among the participants whose

age bracket was 18-20, 7.7% were assigned to the experimental group, while 9.6% were assigned to the control group. For those in the 21-23 age category, 38% were assigned to the experimental group and 21% to the control group. Among the 24-26 age category participants, the distribution was 8.7% to the experimental group and 17.3% to the control group. The distribution of participants' age across the two groups (experimental and control) was significant (p=0.020), an indication that the age frequency was not evenly distributed.

With reference to participants' year of study, 5.7% of the 1st year participants were in the experimental group, and 16.2% were in the control group. The distribution of 2nd year participants was 15.2% in the experimental group and 14.2% in the control group. Among the 3rd year participants, 16.2% were allocated to the experimental group, and 3.8% to the control group. For the 4th year participants, 16.2% were in the experimental group, while 12.4% were in the control group. The chi-square test revealed that the distribution of the participants' year of study was significant (p=0.004). The distribution of participants' mode of study across the research group showed that 52.4% of participants whose mode of study was regular/day were in the experimental group, while 38.1% were in the control group. The distribution across the research group was found to be significant (p=0.004).

As per the participants' marital status across the study group, the distribution was as follows: single but dating participants - equal distribution of 2.0% to both the experimental and the control groups; single and not dating - 52.0% to the experimental group and 36.7% to the control; and married - none to the experimental and entire number (7.1%) to the control The chi-square test showed that there was a significant difference in the distribution of participants' marital status across the study

group (p=0.011).

The distribution of participants (to the study groups) in regard to their place of residence, was as follows: participants living in the campus hostels - 2.1% in the experimental group and 12.6% in the control; those residing off-campus - 15.8% in the experimental and 20% in the control; and those living with family members - 35.8% in the experimental and 13.7% in the control group. There was a significant difference in the distribution of participants' place of residence across the study groups (p=0.0001).

In terms of who pays the participant's fees, the participants were distributed in this manner: those whose fees was paid by parents or family members - 49% to the experimental group and 33.3% to the control; those under scholarship - 3.9% to the control and none to the experimental group; and among the self-sponsored - 4.9% to the experimental group and 8.8% to the control. There was a significant difference in the distribution of who pays participant's fees across the study groups (p=0.022).

4.3 Factors That Put MKU Students at Risk of Alcohol Use

Table 4.7 presents the descriptive statistics of socio-demographic characteristics and AUD at baseline.

Table 4.7: Bivariate Analysis: Socio-Demographic Characteristics and AUD at Baseline

		Participant's scores on AUDIT at Baseline				Chi-Square Test		
Variables	Total	0-7 Low Risk	8-15 moderate Risk	16-19 High Risk	20+ Dependent	Value	df	Sig.
Participant's Year of study								
1st Year	23(21.9)	13(12.4)	5 (4.8)	2(1.9)	3 (2.9)	9.250	3	.415
2nd Year	31(29.5)	24(22.9)	4 (3.8)	2 (1.9)	1 (1.0)			
3rd Year	21(20.0)	16(15.2)	4 (3.8)	0 (0.0)	1 (1.0)			
4th Year	30(28.6)	18(17.1)	10 (9.5)	1 (1.9)	1 (1.0)			
Participant's Gender								
Male	63(59.6)	40(38.5)	12(11.5)	5 (4.8)	5 (4.8)	5.496	1	.139
Female	42(40.4)	30(28.8)	11(10.6)	0 (0.0)	1 (1.0)			
Participant's Mode of Study								
Regular/Day	95(90.5)	64(61.0)	21(20.0)	4 (3.8)	6 (5.7)	1.296	1	.730
Evening	10 (9.5)	7 (6.7)	2 (1.9)	1 (1.0)	0 (0.0)			
Participant's Age								
18-20	19(17.3)	11(10.6)	4 (3.8)	1 (1.0)	2 (1.9)	4.091	2	.664
21-23	59(56.7)	41(39.4)	11(10.6)	4 (3.8)	3 (2.9)			
24-26	27(26.0)	18(17.3)	8 (7.7)	0 (0.0)	1 (1.0)			
Participant's Marital Status								
Single but dating	7 (4.1)	3 (3.1)	0 (0.0)	1 (1.0)	0 (0.0)	5.371	2	.497
Single not dating	89(88.8)	57(58.2)	20(20.4)	4 (4.1)	6 (6.1)			
Married	9 (7.1)	5 (5.1)	2 (2.0)	0 (0.0)	0 (0.0)			
Participant's Place of Residence								
On-Campus	14(14.7)	10(10.5)	3 (3.2)	1 (1.1)	0 (0.0)	3.793	2	.705
Off-campus	38 (35.8)	23(24.2)	5 (5.3)	2 (2.1)	4 (4.2)			
Family Members	53(49.5)	32(33.7)	11(11.6)	2 (2.1)	2 (2.1)			
Who Pays Participant's Fees								
Parents/family members	85(82.4)	56(54.9)	18(17.6)	4 (3.9)	6 (5.9)	1.725	2	.943
Scholarship	4 (3.9)	3 (2.9)	1 (1.0)	0 (0.0)	0 (0.0)			
Self-Sponsored	16(13.7)	10 (9.8)	3 (2.9)	1 (1.0)	0 (0.0)			
Marital Status of Participant's Parents								
Married	72(69.6)	48(46.1)	15(14.7)	3 (2.9)	6 (5.9)	7.035	4	.855
Separated	5 (3.9)	5 (3.9)	0 (0.0)	0 (0.0)	0 (0.0)			
Single-Parents	15(13.7)	10 (9.8)	4 (2.9)	1 (1.0)	0 (0.0)			
Widow	11(10.8)	7 (6.9)	4 (3.9)	0 (0.0)	0 (0.0)			
Widower	4 (2.0)	2 (1.0)	2 (1.0)	0 0.0)	0 (0.0)			
The caregiver the participants living with								
Mother	78(71.9)	76(50.0)	5 (15.6)	2 (6.3)		1.175	2	.882
Father	9 (9.4)	2 (6.3)	1 (3.1)	0 (0.0)				
Guardian	18 (18.8)	3 (15.6)	1 (3.1)	0 (0.0)				

Participants' year of study: the 2nd year participants, at 29.5%, were more than

those in the other years of study. They were followed by the 4th years (at 28.6%), 1st years (at 21.9%), and lastly 3rd years (at 20%). The frequency of the AUDIT scores and its severity were distributed insignificantly (p=0.415).

Also, male participants appeared to have a higher frequency of alcohol use (at 59.6%) compared to the female participants (at 40.4%). The distribution of AUDIT scores also indicated that males had a higher frequency as opposed to female participants. Therefore, no significant difference in the distribution of participant's scores on AUDIT at baseline was found (p=0.139).

Participants' mode of study: the frequency of participants in regard to alcohol use was proportionally higher (at 90.5%) in the regular/day mode of study, in comparison to that for the participants in the evening mode of study (at 9.5%). Distribution of participants scores on AUDIT was not significant (p=0.730).

Age distribution: the participants aged 21-23 years had a higher frequency in alcohol use (at 56.7%) compared to those aged 24-26 years (at 26%), and the 18-20 year-olds (at 17.3%). The distribution of AUDIT scores at baseline was statistically insignificant (p=0.664).

Participants' place of residence: the frequency for the participants who were living with their families was higher (at 49.5%), compared to those living off-campus (at 35.8%), and those living on- campus (at 14.7%). The distribution of participants scores on AUDIT was not significant (p=0.705).

Participants' marital status: the frequency of the participants who were single and not dating was proportionally higher (at 88.8%) in comparison to that of the married ones (at 7.1%), and that of the single but dating (at 4.1%). Distribution of AUDIT scores was not significant (p=0.497).

Who paid participants' fees: participants whose fees was paid by parents or family members were 84.2% compared to the self-sponsored ones (13.7%), and those on scholarship (3.9%). There was no significant difference in the distribution of AUDIT scores (p=0.943).

Marital status of participants' parents: the participants with married parents were 69.6%, those from single-parent families were 13.7%, those whose parents were widows were 10.8%, those whose parents were separated (3.9%), and those whose parents were widowers (2.0%). The distribution of participant scores on AUDIT was not significant.

The frequency of participants who lived with their mothers was 71.9%, compared to those who lived with guardians (8.8%), and those who lived with fathers (9.4%). Statistical analysis showed that there was insignificant difference in the distribution of participant scores on AUDIT. (p=0.885).

The distribution of the socio-demographic characteristics and AUD, as shown in Table 4.7 demonstrates that there was insignificant difference in the distribution of AUDIT scores and its severity in alcohol consumption at baseline (Ps>0.005).

Table 4.8 depicts the logistic regression analysis.

Table 4.8: Factors Contributing to Alcohol Use by MKU Students (Binary Logistic Regression Analysis)

		Parameter Estimates						
							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	AUDIT- Mild	-47.759	273.300	031	1	.861	-583.418	487.899
	AUDIT- Moderate	-34.690	272.847	016	1	.009	-569.461	500.081
Location	Year 1	-23.689	48.578	238	1	.626	-118.900	71.523
	Year 2	-18.244	228.286	006	1	.936	-465.677	429.189
	Year 3	-.067	32.792	000	1	.998	-64.337	64.204
	Year 4	0[a]	.		0	.	.	.
	Male	12.037	37.912	101	1	.751	-62.269	86.343
	Female	0[a]	.		0	.	.	.
	Regular Students	-40.718	289.603	020	1	.888	-608.330	526.894
	Evening students	0[a]	.		0		.	.
	18-20	19.088	473.870	002	1	.968	-909.680	947.856
	22-23	-.107	285.442	000	1	.000	-559.563	559.349
	24-26	0[a]	.	.	0		.	.
	Married	39.914	79.241	254	1	.614	-115.396	195.224
	Singles	0[a]	.		0		.	.
	On-campus	31.320	222.112	020	1	.888	-404.012	466.652
	Off-campus	-13.484	50.585	071	1	.790	-112.629	85.661
	Living with family members	0[a]	.		0		.	.
	Parents/family	-9.631	77.832	015	1	692	-162.179	142.916
	Self-sponsored	0[a]	.		0		.	.
	Sibling - Yes	-11.551	24.685	219	1	640	-59.932	36.830
	Sibling - No	0[a]	.		0		.	.
	Parents Married	-12.611	79.466	025	1	.914	-168.362	143.140
	Separated/Divorce	-13.406	33.016	165	1	.005	-78.116	51.303
	Single Parents	-11.926	40.364	087	1	.018	-91.037	67.185
	Widow	0[a]	.		0		.	.
	Widower	0[a]	.		0		.	.
	Mother	8.404	243.411	001	1	.972	-468.672	485.480
	Father	0[a]	.		0		.	.
	Guardian	0[a]	.		0		.	.

Link function: Logit.
a. This parameter is set to zero because it is redundant.

In statistics, the logistic model of regression is a predictive analysis used to describe the probability that the dependent binary variable is related to one or more nominal or ordinal independent variables. The data in Table 4.8 reveals that most of the variables hypothesized to be risk factors to alcohol use are not significantly related (Ps>0.05). However, the data indicates that the participants whose parents were separated or divorced were at risk of alcohol use (p=0.005). In addition, the logistic

regression analysis showed that participants whose parents were single were at risk of using alcohol (p=0.018). The result of this regression analysis seems to suggest that the marital status of the parents of the participants put the participants at risk of alcohol use.

Table 4.9 displays the distribution of socio-demographic frequency of the participants and their scores on AUDIT at baseline.

Table 4.9: Socio-characteristics and AUDIT Scores at Baseline (Bivariate Analysis)

Variable	Total	Alcohol Use Disorder		Chi-Square Test		
		≤ 7 Low Risk	≥ 8 AUD	Value	df	Sig.
Having sibling(s) in the university						
Yes	37 (35.0)	25 (24.3)	12 (10.7)	.056	1	.813
No	69 (65.0)	46 (43.7)	23 (21.4)			
Participant's place of residence in Primary school						
Urban	45 (44.0)	27 (27.0)	17 (17.0)	.895	2	.388
Rural	55 (54.0)	39 (38.0)	16 (16.0)			
Both	5(2.0)	5 (2.0)	0 (0.0)			
Type of primary school participant went						
Public primary school	62 (58.8)	38 (37.3)	22 (21.6)	1.560	2	.458
Private primary school	42 (40.2)	30 (29.4)	11 (10.8)			
Both	1 (1.0)	1 (1.0)	0 (0.0)			
Participant's place of residence in high school						
Urban	43 (42.6)	28 (27.7)	15 (14.9)	.612	2	.736
Rural	59 (56.4)	39 (38.6)	18 (17.8)			
Both	3(1.0)	1 (1.0)	0 (0.0)			
Type of high school participant went						
Public	85 (81,4)	55 (53.9)	28 (27.5)	.723	2	.697
Private	18 (17.6)	13 (12.7)	5 (4.9)			
Both	2 (1.0)	1 (1.0)	1 (1.0)			
Participant's father's occupation						
Professional	7 (5.7)	4 (4.5)	3 (1.1)	2.937	5	.710
Civil servant	25 (20.5)	19 (13.6)	6 (6.8)			
Self-employed	56 (58.0)	39 (42.0)	17 (15.9)			
Jobless	11 (10.2)	6 (6.8)	3 (3.4)			
Retiree	5 (4.5)	3 (3.4)	2 (1.1)			
Clergy	1 (1.1)	0 (0.0)	1 (1.1)			
Participant's Mother's occupation						
Professional	3 (1.0)	1(0.0)	2 (1.0)	2.920	4	.571
Civil servant	23 (19.6)	15 (13.4)	8 (6.2)			
Self-employed	70 (70.1)	50 (49.5)	20 (20.6)			
Jobless	9 (8.2)	6 (5.2)	3 (3.1)			
Clergy	1 (1.0)	1 (1.0)	0 (0.0)			
Participant seeing father using alcohol						
Yes	44 (40.8)	24 (23.3)	18 (17.5)	.812	1	.051
No	61(59.2)	46 (44.7)	15 (14.6)			
Participant seeing father taking alcohol excessively						
Yes	24 (29.2)	10 (13.9)	11 (15.3)	.079	1	.043
No	81 (70.8)	67 (51.4)	14 (19.4)			
Participant seeing mother using alcohol						
Yes	16 (14.6)	9 (8.7)	6 (5.8)	.511	1	.475

No	89 (85.4)	61 (59.2)	27 (26.2)			
Participant seeing Mother taking alcohol excessively						
Yes	5 (6.3)	4 (4.7)	1 (1.6)	.284	1	.594
No	100 (93.8)	37 (57.8)	23 (35.9)			
Participant seeing guardian using alcohol						
Yes	21 (14.7)	16 (8.0)	5 (6.7)	.326	1	.250
No	84 (85.3)	46 (61.3)	18 (24.0)			
Participant seeing guardian taking alcohol excessively						
Yes	9 (16.4)	5 (9.1)	31 (56.4)	.466	1	.495
No	46 (83.6)	31 (56.4)	15 (27.3)			
Participant seeing Friends using alcohol						
Yes	79 (75.5)	48 (47.1)	29 (28.4)	.046	1	.044
No	26 (24.5)	21 (20.6)	4 (3.9)			
Participant seeing friends taking alcohol excessively						
Yes	36 (41.9)	17 (19.8)	19 (22.1)	.519	1	.006
No	69 (58.1)	38 (44.2)	12 (14.0)			
Participant going to parties where alcohol is accessed						
Yes	87 (82.7)	55 (52.9)	31 (29.8)	.272	1	.039
No	18 (17.3)	16 (15.4)	2 (1.9)			

The results of the bivariate analysis show that most of the variables were insignificantly distributed, with the exception of participant seeing father using alcohol (p=0.051), participant seeing father taking alcohol excessively (p=0.043), participant seeing friends using alcohol (p=0.044), participant seeing friends taking alcohol excessively (p=0.006), and participant going to parties where alcohol is accessed (p=0.039). The implication is that these variables seem were distributed significantly.

Table 4.10 captures the multinomial logistic regression (MLR), showing the predictive assessment of socio-demographic characteristics and AUD among the participants.

Table 4.10: MLR Predictive Analysis: AUD among the Participants

Participant diagnosed with Alcohol Use Disorder		Parameter Estimates						95% Confidence Interval for Exp(B)	
		B	Std. Error	Wald	df	Sig.	Exp(B)	Lower Bound	Upper Bound
8 =	Intercept High Risk AUD	-64.127	8129.129	000	1	.994			
	[Pry_Sch_1=1.00]	-54.294	1058.886	003	1	.959	2.633E-24	.000	[b.]
	[Pry_Sch_1=2.00]	-40.806	.000		1	.	1.897E-18	1.897E-18	1.897E-18
	[Pry_Sch_1=3.00]	0[c]	.		1	.	.	.	.
	[Pry_Sch_2=1.00]	14.629	1884.357	000	1	.994	2254882.327	.000	. [b]
	[Pry_Sch_2=2.00]	0[c]	.			.	.	.	.
	[Pry_Sch_2=3.00]	0[c]	.			.	.	.	.
	High_Sch_1=1.00]	43.807	2518.490	000	1	.986	106003577574 2900000. 000	.000	. [b]
	High_Sch_1=2.00]	0[c]	.				.	.	.
	High_Sch_2=1.00]	29.411	2285.063	000	1	.990	593245854725 4.319	.000	. [b]
	High_Sch_2=2.00]	0[c]	.				.	.	.
	Fath_Alcoh_1=1.00	86.916	3458.127	001	1	.018	5.587E+37	.000	. [b]
	Fath_Alcoh_1=2.00	0[c]	.		0		.	.	.
	Fath_Alcoh_2=1.00]	17.719	3562.180	000	1	.006	4955195065	.000	. [b]
	Fath_Alcoh_2=2.00]	0[c]	.				.	.	.
	Moth_Alcoh_1=1.00]	-29.826	1946.685	000	1	.988	1.113E-13	.000	. [b]
	Moth_Alcoh_1=2.00]	0[c]	.		0		.	.	.
	Moth_Alcoh_2=1.00]	-77.913	6706.869	000	1	.011	1.455E-34	.000	. [b]
	Moth_Alcoh_2=2.00]	0[c]	.		0		.	.	.
	Guard_alcoh_1=1.00]	156.873	13712.19	000	1	.991	1.346E+68	.000	. [b]
	Guard_alcoh_1=2.00]	0[c]	.		0		.	.	.
	Guard_alcoh_2=1.00]	156.419	13712.19	000	1	.991	1.170E-68	.000	. [b]
	Guard_alcoh_2=2.00]	0[c]	.		0		.	.	.
	Friend_alcoh_1=1.00]	-41.547	4417.936	000	1	.002	9.042E-19	.000	. [b]
	Friend_alcoh_1=2.00]	0[c]	.		0		.	.	.
	[Friend_alcoh_2=1.00]	87.824	58.130	001	1	.010	1.386E+38	.000	. [b]
	Friend_alcoh_2=2.00]	0[c]	.		0		.	.	.
	Parties_alcoh=1.00]	14.162	6812.432	000	1	.001	1414604.96	.000	. [b]
	Parties_alcoh=2.00]	0[c]	.		0		.	.	.

a. The reference category is: ≤ 7= Low Risk Alcohol Use.

b. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c. This parameter is set to zero because it is redundant.

Multinomial logistic regression is the regression analysis to conduct when the dependent variable is nominal with more than two levels. It is used to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables. Participants who scored above eight (8) were considered to be at high risk of AUD and this is used as intercept in the

analysis to model nominal outcome variable in which the log odds of the outcomes are modeled as a linear combination of the predictor variables.

Most of the variables tested in this study were insignificant statistically to be risk factors of AUD among the participants (Ps>0.005). However, the findings shown in Table 4.10 indicate that seeing father using alcohol was a contributing factor of AUD among the participants β=86.916 ± (SE: 3458.127) p = 0.018. Seeing father taking alcohol excessively was also a risk factor of AUD among the participants (β=17.719 ± (SE: 3562.180) p=.006). This implies that drinking attitude of a father influences the child to use alcohol as well.

Similarly, the result of multinomial regression showed that participant seeing mother using alcohol is not statistically significant to be a contributor to AUD (p=0.988). Nevertheless, participant seeing mother taking alcohol excessively was statistically established to be a risk factor of AUD among the participants (p=0.011). This seems to suggest that the father plays more roles in modelling behavior of the participants, but when mother's alcohol consumption becomes excessive, it influences the participant to take after her.

In addition, the results indicated that participants seeing friends using alcohol put them (participants) at risk of AUD (p=0.002). Further, participant seeing friends taking alcohol excessively was established as a significant risk factor for AUD among the participants (p=0.010). The predictive influence of friends, as seen in this study, implies that peer influence plays a significant role in the development of AUD. Likewise, multinomial regression result affirmed that participant going to parties where alcohol is accessed was a contributing factor to AUD (p=0.001). This result seems to suggest that alcoholic behavior can be acquired by observing and imitating

others.

Further, this study sought to assess the predictive probability of taking illicit drug and alcohol use among the participants. Table 4.11 outlines the distribution of variables related to illicit drugs and AUD at the baseline.

Table 4.11: Illicit Drug Use and AUD (Bivariate Analysis)

	Total	Alcohol Use Disorder		Chi-Square Test		
		≤ 7 = Low Risk	≥8 = AUD	Value	df	Sig
Participant's father using other illicit drugs						
Yes	7 (7.3)	3 (3.1)	4 (4.2)	2.133	1	.144
No	89 (92.7)	62 (64.6)	27 (28.1)			
Participant's mother using other illicit drugs						
Yes	4 (4.5)	2 (2.3)	2 (2.3)	.472	1	.492
No	84 (95.5)	56 (63.6)	28 (31.8)			
Participant's guardian using other illicit drugs						
Yes	6 (8.5)	3 (4.2)	3 (4.2)	.928	1	.335
No	65 (91.5)	45 (63.4)	20 (28.2)			
Participant's friends using other illicit drugs						
Yes	48 (48.5)	25 (25.3)	23 (23.2)	10.357	1	.001
No	51 (51.5)	42 (42.4)	9 (9.1)			
Participant using other illicit drugs						
Yes	21 (20.4)	10 (9.7)	11 (10.7)	5.013	1	.025
No	82 (79.6)	60 (58.3)	22 (21.4)			
How easily accessible is illicit drugs to the participant						
Easily accessible	22 (37.9)	8 (13.8)	14 (24.1)	10.731	2	.005
Not easily accessible	17 (29.3)	15 (25.9)	2 (3.4)			
Moderately accessible	19 (32.8)	10 (17.2)	9 (15.5)			
Participant's media influence to use illicit drugs						
Advertisement on TV	21 (33.3)	13 (20.6)	8 (12.7)	2.861	3	.414
Advertisement on print media	2 (3.2)	1 (1.6)	1 (1.6)			
Advertisement by celebrities	31 (49.2)	13 (20.6)	18 (28.6)			
Other media	9 (14.3)	6 (9.5)	3 (4.8)			

The frequency of the variable that the participants' father uses illicit drugs: the participants who did not agree that their father uses illicit drugs were higher (28.1%) in AUDIT, in comparison to the ones who agreed (4.2%). Chi-square statistics indicated that there was no significant difference in the distribution of participant's father using illicit drugs and AUD (p=0.144). In the same way, the participants who did not agree that their mother uses illicit drugs scored higher (31.8%) as opposed to

those who agreed (2.3). The difference in the distribution of mother who uses illicit drugs and AUD at the baseline was (p=0.492).

The participants who did not agree that their guardian was using other illicit drugs scored higher in AUDIT (28.2%) than those who agreed (4.2%). The distribution of participant's guardian using other illicit drugs and AUD was not statistically significant (p=0.335). Besides, the participants who agreed that their friends were using other illicit drugs scored higher (23.2%) than those who did not agree (9.1%). Chi-square test showed that the distribution of participant's friends using other illicit drugs and AUD at baseline was significant (p=0.001).

The participants who did not use other illicit drugs scored higher on AUDIT (79.6%) compared to those who responded 'Yes' to using other illicit drugs (20.4%). There was a significant difference in the distribution of participants using other illicit drugs and alcohol use (p=0.025)

Additionally, participants who considered illicit drugs as easily accessible scored higher (24.1%) compared to the ones whose view was that the drugs were not easily accessible (3.4%), and those who thought the drugs were moderately accessible (15.5%). The distribution of how easily accessible illicit drugs were to the participants and alcohol use was significant (p=0.005).

Media influence on participants' use of illicit drugs: the participants who perceived advertisement by celebrities as an influence to use of illicit drugs scored higher on AUDIT (28.6%), compared to influence by advertisement on TV (12.7%), advertisement on print media (1.6%), and other media (4.8%). Chi-square test showed an insignificant distribution of participants' media influence to use of illicit drugs and participants' alcohol use at baseline (p=0.414).

Table 4.12 illustrates the probit regression showing the relationship between the participant's associates taking illicit drugs and the participant's probability of using alcohol.

Table 4.12: Participant's Associates Taking Illicit Drugs and Participants' Probability of using Alcohol (Probit Regression)

Parameter Estimates

		Parameter	Estimate	Std. Error	Z	Sig.	95% Confidence Interval Lower Bound	Upper Bound
PROBIT[a]		Participant's father using other illicit drugs	.307	.516	.595	.552	-.705	1.319
		Participant's mother using other illicit drugs	.384	.677	.567	.571	-.943	1.710
		Participant's guardian using other illicit drugs	.458	.558	-.820	.412	-1.552	.636
		Participant's friends using other illicit drugs	-.045	.427	-.104	.917	-.882	.793
		Intercept[b]	-.879	2.116	-.415	.678	-2.995	1.237

a. PROBIT model: PROBIT(p) = Intercept + BX
b. Corresponds to the grouping variable AUD. ≥ 8 = High Risk

Probit analysis is a form of regression whose method of analysis assesses the relationship between a stimulus and the outcome reaction (dependent variable). In this study, it assesses participant's associates such as father, mother, guardian, and friends using illicit drugs as stimulus. The outcome reaction is to assess the probability that the participants are likely to use alcohol. The findings captured in Table 4.11 indicate that none of the stimuli was significantly predictive of AUD among the participants (Ps>0.05).

Since it was statistically established that participants associates' use of other illicit drugs was not a risk factor for AUD, this study attempted to assess the possibility of participants' associates (such as father, mother, guardian, and friends) use of other illicit drugs contributing to the participants' doing the same.

Table 4.13 presents the descriptive mean analysis of participants' associates

using illicit drugs.

Table 4.13: Participant's Associates Using Illicit Drugs (Descriptive Mean Analysis)

Variables		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Participant's father using other illicit drugs	Yes	1	.9048	.30079	06564	1.7678	2.0417	1.00	2.00
	No	3	1.9315	.25434	02977	1.8722	1.9908	1.00	2.00
	Total	4	1.9255	.26394	02722	1.8715	1.9796	1.00	2.00
Participant's mother using other illicit drugs	Yes	9	2.0000	.00000	00000	2.0000	2.0000	2.00	2.00
	No	8	1.9412	.23704	02875	1.8838	1.9986	1.00	2.00
	Total	7	1.9540	.21065	02258	1.9091	1.9989	1.00	2.00
Participant's guardian using other illicit drugs	Yes	5	1.8000	.41404	10690	1.5707	2.0293	1.00	2.00
	No	6	1.9464	.22721	03036	1.8856	2.0073	1.00	2.00
	Total	1	1.9155	.28013	03324	1.8492	1.9818	1.00	2.00
Participant's friends using other illicit drugs	Yes	1	1.0952	.30079	06564	.9583	1.2322	1.00	2.00
	No	6	1.6316	.48558	05570	1.5206	1.7425	1.00	2.00
	Total	7	1.5155	.50236	05101	1.4142	1.6167	1.00	2.00

As shown in Table 4.13, the participant's using other illicit drugs mean was 1.9048 with a standard deviation of .30079, while the participant's father not using other illicit drugs mean was 1.9315 with a standard deviation of .25434. The grand mean for participant's father using other illicit drugs was 1.9255 with a standard deviation of .26394. Similarly, the participant's using other illicit drugs mean was 2.0000 with a standard deviation of .00000, while the mean for participant's mother not using illicit drugs was 1.9412 with a standard deviation of .23704. The grand mean for the participant's mother using illicit drugs was 1.9540 with a standard deviation of .21065.

With regard to participant's guardian using other illicit drugs, the mean of those who responded 'Yes' to using illicit drugs was 1.8000 with a standard deviation of .41404 and the mean for participants who responded 'No' to guardians using other illicit drugs was 1.9464 with a standard deviation of .22721. The grand mean for participant's guardian using other illicit drugs was 1.9155 with a standard deviation of

.48558. Similarly, the mean of participants who responded 'Yes' to friends using other illicit drugs was 1.0952 with a standard deviation of .30079, while the mean participants saying 'No' to friends using illicit drugs was 1.6316 with a standard deviation of .48558. The grand mean participant's friends using other illicit drugs was 1.5155 with a standard deviation of .50236.

Table 4.14 highlights the predictive behavior of participants and their associates using illicit drugs.

Table 4.14: Participants' Illicit Drugs Behaviour and their Associates Using Illicit Drugs (ANOVA Analysis)

ANOVA

				Sum of Squares	df	Mean Square	F	Sig.
Participant's father using other illicit drugs	Between Groups	(Combined)		.012		.012	.166	.685
		Linear Term	Unweighted	.012		.012	.166	.685
			Weighted	.012		.012	.166	.685
	Within Groups			6.467	2	.070		
	Total			6.479	3			
Participant's mother using other illicit drugs	Between Groups	(Combined)		.051		.051	.160	.284
		Linear Term	Unweighted	.051		.051	.160	.284
			Weighted	.051		.051	.160	.284
	Within Groups			3.765	5	.044		
	Total			3.816	6			
Participant's guardian using other illicit drugs	Between Groups	(Combined)		.254		.254	.341	.072
		Linear Term	Unweighted	.254		.254	.341	.072
			Weighted	.254		.254	.341	.072
	Within Groups			5.239	9	.076		
	Total			5.493	0			
Participant's friends using other illicit drugs	Between Groups	(Combined)		4.733		4.733	3.066	.000
		Linear Term	Unweighted	4.733		4.733	3.066	.000
			Weighted	4.733		4.733	3.066	.000
	Within Groups			19.494	5	.205		
	Total			24.227	6			

The ANOVA statistics accepted the null hypothesis that there is no association between the participant's father using other illicit drugs and participants using illicit drugs (p=0.166). The ANOVA result also accepted the null hypothesis that there would be no significant difference in means of the participant's mother using illicit drugs and participant using other illicit drugs (p=0.284). This also implied that the

participant's mother using illicit drugs was not a risk factor for the participant using illicit drugs. In the same way, the participant's guardian using illicit drugs was also tested to determine whether there would be a significant difference in mean and participant using other illicit drugs. The ANOVA analysis revealed that there was no significant difference between the participant's guardian using other illicit drugs and the mean of the participant using other illicit drugs (p=0.072). This means that guardian using illicit drugs does not influence participant to use other illicit drugs.

However, the ANOVA Table shows that the null hypothesis that there was no significant difference in means of participant's friends using other illicit drugs was rejected (p=0.0001). It can hence be inferred that there was a significant difference in means of participant's friends using other illicit drugs and participant also using other illicit drugs. This suggests that participant's friends' use of other illicit drugs is a contributing factor to the participant's use of the drugs.

4.5 Common Comorbidities resulting from the use of Alcohol among MKU Students

Table 4.15 shows the bivariate analysis of socio-demographic characteristics of participants' scores of anxiety at the baseline.

Table 4.15: Bivariate Analysis: Socio-Demographic Characteristics of Participant's Scores of Anxieties at Baseline

Variable	Total %	Participant's Scores on Anxiety at Baseline 0-21 = Low Anxiety	22-25 = Moderate Anxiety	36+ = Severe Anxiety	Chi-Square Test Value	df	Sig.
			Participant's Gender				
Male	60 (59.4)	49 (48.5)	7 (6.9)	4 (4.0)	2.728	1	.256
Female	41 (40.6)	30 (29.7)	4 (4.0)	7 (6.9)			
			Participant's Age				
18-20	17 (16.8)	13 (12.9)	0 (0.0)	4 (4.0)	5.450	2	.244
21-23	57 (56.4)	44 (43.6)	8 (7.9)	5 (5.0)			
24-26	27 (26.7)	22 (21.8)	3 (3.0)	27 (26.7)			
			Participant's Year of Study				
1st Year	21 (20.6)	16 (15.7)	4 (3.9)	1 (1.0)	14.599	3	.024
2nd Year	30 (29.4)	19 (18.6)	3 (2.9)	8 (7.8)			
3rd Year	21 (20.6)	18 (17.6)	1 (1.0)	2 (2.0)			
4th Year	30 (29.4)	27 (26.5)	3 (2.9)	0 (0.0)			
			Participant's Mode of Study				
Regular/Day	93 (91.2)	73 (71.6)	10 (9.8)	10 (9.8)	.002	1	.999
Evening	9 (8.8)	7 (6.9)	1 (1.0)	1 (1.0)			
			Participant's Marital Status				
Single but Dating	4 (4.2)	3 (3.2)	0 (0.0)	1 (1.1)	2.113	2	.715
Single but not dating	84 (88.4)	65 (68.4)	10 (10.5)	9 (9.5)			
Married	7 (7.4)	6 (6.3)	1 (1.1)	0 (0.0)			
			Participant's Place of Residence				
On-campus Hostels	13 (14.1)	8 (8.7)	2 (2.2)	3 (3.3)	7.292	2	.121
Off-campus	33 (35.9)	30 (32.6)	0 (0.0)	3 (3.3)			
Living with family members	46 (50.0)	35 (38.0)	6 (6.5)	5 (5.4)			
			Who Pays Participant's fees				
Parents/family members	82 (82.8)	65 (65.7)	7 (7.1)	10 (10.1)	.314	2	.257
Scholarship	3 (3.0)	2 (2.0)	0 (0.0)	1 (1.0)			
Self-sponsored	14 (14.1)	11 (11.1)	3 (3.0)	0 (0.0)			
			Marital Status of Participant's Parents				
Married	69 (69.7)	55 (55.6)	8 (8.1)	6 (6.1)	10.102	4	.258
Separated	4 (4.0)	4 (4.0)	0 (0.0)	0 (0.0)			
Single Parent	13 (13.1)	12 (12.1)	1 (1.0)	0 (0.0)			
Widow	11 (11.1)	7 (7.1)	1 (1.0)	3 (3.0)			
Widower	2 (2.0)	1 (1.0)	0 (0.0)	1 (1.0)			
			Participant's Father's Occupation				
Professional	5 (5.8)	5 (5.8)	0 (0.0)	0 (0.0)	8.410	5	.589
Civil Servant	18 (20.9)	15 (17.4)	3 (3.5)	0 (0.0)			
Self-employed/Business	49 (57.0)	37 (43.0)	5 (5.8)	7 (8.1)			
Jobless	9 (10.5)	7 (8.1)	2 (2.3)	0 (0.0)			
Retiree	4 (4.7)	3 (3.5)	0 (0.0)	1 (1.2)			
Clergy	1 (1.2)	1 (1.2)	0 (0.0)	0 (0.0)			
			Participant's Mother's Occupation				
Professional	1 (1.1)	1 (1.1)	0 (0.0)	0 (0.0)	6.604	4	.580
Civil Servant	19 (20.2)	18 (19.1)	1 (1.1)	0 (0.0)			
Self-employed/Business	65 (69.1)	49 (52.1)	8 (8.5)	8 (8.5)			
Jobless	8 (8.5)	6 (6.4)	0 (0.0)	2 (2.1)			
Clergy	1 (1.1)	1 (1.1)	0 (0.0)	0 (0.0)			

The frequency of the participants' gender and BAI showed that the scores for male participants on moderate anxiety were higher (6.9%) than for the female participants (4.0%). However, the distribution of gender and anxiety scores was not significant (p=0.256). In the same way, participants aged 21-23 years scored higher (7.9%) on moderate anxiety compared to those aged 24-26 years (at 3.0%). None of the participants aged 18-20 years exhibited moderate anxiety. The distribution of the participants' age and scores on anxiety at baseline was insignificant (p=0.244) (see Table 4.15).

The distribution of other socio-demographic characteristics and anxiety scores at baseline were insignificant (Ps>0.005) as shown in Table 4.15. In terms of participants' year of study, the frequency of 1st year participants' scores on moderate anxiety was higher (3.9%) compared with participants who were in 2nd year (2.9%), 3rd year (1.0%), and 4th year (2.9%). Chi-square test showed that there was a significant difference in the distribution of participants' year of study and anxiety scores at baseline (p=0.024) (see Table 4.15). This gives the indication that the participant's year of study was the only extraneous variable playing a confounder's role in the distribution of participants' socio-demographic characteristics and anxiety at the baseline.

Table 4.16 presents the bivariate analysis of socio-demographic characteristics of participant's scores on depression at the baseline.

Table 4.16: Socio-Demographic Characteristics of Participants' Scores on Depression at Baseline(Bivariate Analysis)

Variable	Total	Participant's Scores on Depression at Baseline 0-13 = Minimal ups and downs	14-19 = Mild Depression	20-28= Moderate Depression	29-63= Severe Depression	Chi-Square Test Value	df	Sig.
			Participant's Gender					
Male	62 (60.2)	51 (49.5)	7 (6.8)	4 (3.9)	0 (0.0)	1.61	1	.657
Female	41 (39.8)	32 (31.1)	5 (4.9)	3 (2.9)	1 (1.0)	1		
			Participant's Age					
18-20	18 (17.5)	14 (13.6)	1 (1.0)	2 (1.9)	1 (1.0)	6.50	2	.369
21-23	58 (56.3)	46 (44.7)	8 (7.8)	4 (3.9)	0 (0.0)	6		
24-26	27 (26.2)	23 (22.3)	3 (2.9)	1 (1.0)	0 (0.0)			
			Participant's Year of Study					
1st Year	22 (21.2)	20 (19.2)	1 (1.0)	1 (1.0)	0 (0.0)	.778	3	.660
2nd Year	31 (29.8)	22 (21.2)	4 3.8)	4 (3.8)	1 (1.0)			
3rd Year	21 (20.2)	17 (16.3)	3 (2.9)	1 (1.0)	0 (0.0)			
4th Year	30 (28.8)	25 (24.0)	4 (2.8)	1 (1.0)	0 (0.0)			
			Participant's Mode of Study					
Regular/Day	94 (90.4)	75 (72.1)	11(10.6)	7 (6.7)	1 (1.0)	.990	1	.804
Evening	10 (9.6)	9 (8.7)	1 (1.0)	0 (0.0)	0 (0.0)			
			Participant's Marital Status					
Single but Dating	4 (4.1)	4 (4.1)	0 (0.0)	0 (0.0)	0 (0.0)	2.827	2	.830
Single but not dating	86 (88.7)	68 (70.1)	12 (12.4)	5 (5.2)	1 (1.0)			
Married	7 (7.2)	7 (7.2)	0 (0.0)	0 (0.0)	0 (0.0)			
			Participant's Place of Residence					
On-campus	14 (14.9)	12 (12.8)	0 (0.0)	2 (2.1)	0 (0.0)	8.322	2	.215
Hostels	34 (36.2)	30 (31.9)	2 (2.1)	2 (2.1)	0 (0.0)			
Off-campus Living with family members	46 (48.9)	34 (36.2)	9 (9.6)	2 (2.1)	1 (1.1)			
			Who Pays Participant's fees					
Parents/family	84 (83.2)	66 (65.3)	10 (9.9)	7 (6.9)	1 (1.0)	2.271	2	.893
Scholarship	3 (3.0)	3 (3.0)	0 (0.0)	0 (0.0)	0 (0.0)			
Self-sponsored	14 (13.9)	12 (11.9)	0 (0.0) 2 (2.0)	0 (0.0)	0 (0.0)			
			Marital Status of Participant's Parents					
Married	70 (69.3)	54 (53.5)	10 (9.9)	5 (5.0)	1 (1.0)	6.723	4	.875
Separated	4 (4.0)	4 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)			
Single Parent	14 (13.9)	13 (12.9)	0 (0.0)	1 (1.0)	0 (0.0)			
Widow	11 (10.9)	9 (8.9)	0 (0.0)	1 (1.0)	0 (0.0)			
Widower	2 (2.0)	1 (1.0)	1 (1.0) 1 (1.0)	0 (0.0)	0 (0.0)			
			Participant's Father's Occupation					
Professional	5 (5.7)	4 (4.6)	1 (1.1)	0 (0.0)	0 (0.0)	14.894	5	.459
Civil	18 (20.7)	12 (13.8)	6 (6.9)	0 (0.0)	0 (0.0)			
	50 (57.5)	41 (47.1)	3 (3.4)	5 (5.7)	1 (1.1)			

Servant								
Self-employed/ Business	9 (10.3)	8 (9.2)	1 (1.1)	0 (0.0)	0 (0.0)			
Jobless	4 (4.6	3 (3.4)	0 (0.0)	1 (1.1)	0 (0.0)			
Retiree	1 (1.1)	1 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)			
Clergy								
			Participant's Mother's Occupation					
Professional	1 (1.0)	1 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)	18.398	4	.104
Civil Servant	19 (19.8)	13 (13.5)	5 (5.2)	1 (1.0)	0 (0.0)			
Self-employed/ Business	67 (69.8)	57 (59.4)	5 (5.2)	5 (5.2)	0 (0.0)			
Jobless	8 (8.3)	6 (6.3)	0 (0.0)	1 (1.0)	1 (1.0)			
Clergy	1 (1.0)	1 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)			

The frequency of the participants' gender and BDI showed that male participants scored at least mild depression higher (6.8%) as opposed to female participants (4.9%). Chi-square analysis indicated that there was no significant difference in the distribution of participant's gender and scores on depression at baseline (p=0.657). As regards participant's age, participants aged 21-23 years scored higher (at 7.8%) on mild depression compared to those aged 24-26 years (at 2.9%), those aged 18-20 years (at 1%). There was no significant difference in the distribution of participants' age and scores on depression at baseline (p=0.369). The distribution of other socio-demographic characteristics and scores on depression at baseline were insignificant (Ps>0.005) (as shown in Table 4.16).

Table 4.17 shows the mean statistics of participant's scores on alcohol, depression, and anxiety at the baseline.

Table 4.17: Participant's Scores on Depression, Anxiety, and Alcohol Use at Baseline (Item Statistics)

Items	Mean	Std. Deviation	N
Participant's scores on AUDIT at Baseline	1.4804	.82930	102
Participant's scores on Depression at Baseline	1.2647	.61219	102
Participant's scores on Anxiety at Baseline	1.3627	.74181	102

The mean alcohol use among the participant was 1.4804 with a standard deviation of .82930, the depression mean at baseline was 1.2647 with a standard deviation of .61219, and that of anxiety mean was 1. 3627 with a standard deviation of .74181 (as shown in Table 4.17).

Table 4.18 illustrates the reliability analysis - where alcohol use, depression, and anxiety scores at baseline were tested to see how consistent they were in the correlation matrix

Table 4.18: Consistency of Correlation between Alcohol Use, Depression, and Anxiety among the Participants (Reliability Analysis)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		81.271	101	.805		
Within People	Between Items	2.379	2	1.190	2.944	.055
	Residual	81.621	202	.404		
	Total	84.000	204	.412		
Total		165.271	305	.542		

Grand Mean = 1.3693

The null hypothesis was tested that there was no significant difference in means of between items (alcohol use, depression, and anxiety) and consistency of correlation. The results captured in Table 4.18 demonstrate that the null hypothesis was rejected (p=0.055). This implies that there was a significant difference in the mean between item statistics; hence alcohol use, depression, and anxiety were

statistically correlated.

Table 4.19: Intraclass Correlation Coefficient Test

		95% Confidence Interval		F Test with True Value 0			
	Intraclass Correlation[b]	Lower Bound	Upper Bound	Value	f1	f2	Sig
Single Measures	.248[a]	.126	.378	1.991	01	02	.000
Average measures	.498[c]	.302	.646	1.991	01	02	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.
a. The estimator is the same, whether the interaction effect is present or not.
b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.
c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Intraclass correlation coefficient test (ICC) measures the reliability of measurements for clusters. For instance, alcohol use, depression, and anxiety data was collected as groups and tested. If one operates as a single measure, will it always be in the same matrix with other items in the same group? Table 4.18 indicates a high ICC (p=0.0001) which implies a high similarity between values from the same group. This means that if a participant is depressed or having anxiety, it is highly possible that such participant drinks alcohol and vice visa.

4.6: Efficacy of MI Therapy on AUD among Students in MKU

Table 4.20 captures the descriptive analysis of socio-demographic distributions and AUDIT scores at baseline.

Table 4.20: Participants' AUDIT Scores at Baseline (Bivariate Analysis)

		Participant's scores on AUDIT at baseline				Chi-Square Test		
Variable	Total	0-7 Low Risk	8-15 Moderate Risk	16-19 High Risk Harmful	20+ Dependent Level	Value	df	Sig.
			Participant's Gender					
Male	62 (59.6)	40 (38.5)	12 (11.5)	5 (4.8)	5 (4.8)	.496	1	.139
Female	42 (40.4)	30 (28.8)	11 (10.6)	0 (0.0)	1 (1.0)			
			Participant's Age					
18-20	18 (17.3)	11 (10.6)	4 (3.8)	1 (1.0)	2 (1.9)	4.091	2	.664
21-23	59 (56.7)	41 (39.4)	11 (10.6)	4 (3.8)	3 (2.9)			
24-26	27 (26.0)	18 (17.3)	8 (7.7)	0 (0.0)	1 (1.0)			
			Participant's Year of Study					
1st Year	23 (21.9)	13 (12.4)	5 (4.8)	2 (1.9)	3 (2.9)	.250	3	.415
2nd Year	31 (29.5)	24 (22.9)	4 (3.8)	2 (1.9)	1 (1.0)			
3rd Year	21 (20.0)	16 (15.2)	4 (3.8)	0 (0.0)	1 (1.0)			
4th Year	30 (28.6)	18 (17.1)	10 (9.5)	1 (1.0)	1 (1.0)			
			Participant's Mode of Study					
Regular/Day	95 (90.5)	64 (61.0)	21 (20.0)	4 (3.8)	6 (5.7)	.296	1	.730
Evening	10 (9.5)	7 (6.7)	2 (1.9)	1 (1.0)	0 (0.0)			
			Participant's Marital Status					
Single but dating	4 (4.1)	3 (3.1)	0 (0.0)	1 (1.0)	0 (0.0)	.371	2	.497
Single but not in relationship	87 (88.8)	57 (58.2)	20 (20.4)	4 (4.1)	6 (6.1)			
Married	7 (7.1)	5 (5.1)	2 (2.0)	0 (0.0)	0 (0.0)			
			Participant's Place of Residence					
On-campus Hostels	14 (14.7)	10 (10.5)	3 (3.2)	1 (1.1)	0 (0.0)	.793		.705
Off-campus	34 (35.8)	23 (24.2)	5 (5.3)	2 (2.1)	4 (4.2)			
Living with family members	47 (49.5)	32 (33.7)	11 (11.6)	2 (2.1)	2 (2.1)			
			Who Pays Participant's Fees?					
Parents/family members	84 (82.4)	56 (54.9)	18 (17.6)	4 (3.9)	6 (5.9)	.725	2	.943
Scholarship	4 (3.9)	3 (2.9)	1 (1.0)	0 (0.0)	0 (0.0)			
Self-Sponsored	14 (13.7)	10 (9.8)	3 (2.9)	0 (0.0)	0 (0.0)			
			Participant having sibling(s) in the university					
Yes	36 (35.0)	24 (23.3)	7 (6.8)	3 (2.9)	2 (1.9)	.594	1	.661
No	67 (65.0)	45 (43.7)	16 (15.5)	2 (1.9)	4 (3.9)			
			Marital Status of Participant's Parents					
Married	71 (69.6)	47 (46.1)	15 (14.7)	3 (2.9)	6 (5.9)	.035	4	.855
Separated	4 (3.9)	4 (3.9)	0 (0.0)	0 (0.0)	0 (0.0)			
Single Parents	14 (13.7)	10 (9.8)	3 (2.9)	1 (1.0)	0 (0.0)			
Widow	11 (10.8)	7 (6.9)	4 (3.9)	0 (0.0)	0 (0.0)			
Widower	2 (2.0)	1 (1.0)	1 (1.0)	0 (0.0)	0 (0.0)			
			Participant's father's Occupation					
Professional	5 (5.7)	4 (4.5)	0 (0.0)	1 (1.1)	0 (0.0)	3.563	5	.559
Civil servant	18 (20.5)	12 (13.6)	5 (5.7)	1 (1.1)	0 (0.0)			
Self-employed /Business	51 (58.0)	36 (40.9)	9 (10.2)	1 (1.1)	5 (5.7)			
Jobless	9 (10.2)	6 (6.8)	2 (2.3)	0 (0.0)	1 (1.1)			
Retiree	4 (4.5)	3 (3.4)	1 (1.1)	0 (0.0)	0 (0.0)			
Clergy	1 (1.1)	0 (0.0)	1 (1.1)	0 (0.0)	0 (0.0)			

			Participant's Mother's Occupation				
Professional	1 (1.0)	0 (0.0)	0 (0.0)	1 (1.0)	0 (0.0)	9.077	.000
Civil servant	19 (19.6)	13 (13.4)	4 (4.1)	1 (1.0)	1 (1.0)		
Self-employed/ Business	68 (70.1)	48 (49.5)	16 (16.5)	2 (2.1)	2 (2.1)		
Jobless	8 (8.2)	4 (4.1)	1 (1.0)	0 (0.0)	3 (3.1)		
Clergy	1 (1.0)	1 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)		

Among the gender characteristics, male participants scored higher (at 38.5%) on low risk in alcohol use compared to moderate risk (at 11.5%), high risk (at 4.8%), and dependent level (at 4.8%). Similarly, female participants scored higher (at 28.8%) on low risk compared to moderate risk at (10.6%) and dependent level (at 1.0%). One participant did not indicate their gender. Chi-square test indicated that the distribution of participants' scores on AUDIT among gender distribution was insignificant (p=0.139).

In terms of participants' age, the frequency of the participants who scored higher on moderate risk to alcohol use among those aged 21-23 years was 10.6%, compared to those aged 24-26 years (7.7%), and finally those aged 18-20 (3.8%). Chi-square statistics indicated that there was no significant difference in the distribution of participants' age and alcohol use among the participants at baseline (p=0.664). Additionally, the frequency of participants' year of study and AUDIT scores at least on moderate risk to alcohol use showed that the 4th year participants scored higher (9.5%) as opposed to the 3rd years (3.8%), 2nd years (3.8%), and 1st years (4.8%). The distribution of the participants' year of study and AUDIT scores at baseline was insignificant (p=0.415).

The distribution of other socio-demographic characteristics and AUDIT scores at baseline were insignificant (Ps>0.005) as shown in Table 4.20. However, in terms of participant's mother's occupation, the frequency of the participant whose mother's

occupation was self-employed/business scored higher on moderate risk to alcohol (16.5%) compared to those whose mother was a civil servant (4.1%), and jobless (1.0). Chi-square test showed that there was a significant difference in the distribution of a participant's mother's occupation and AUDIT scores at baseline (p=0.0001). This implies that a participant's mother's occupation played a confounder's role in the distribution of participant's socio-demographic characteristics and alcohol use at baseline.

Table 4.21 presents the Principal Components Analysis (PCA)'s symptoms reduction of AUD among the participants from baseline to midline and to end line.

Table 4.21: Symptoms Reduction Mean Estimates (Principal Components Analysis (PCA)

Group	Time	Mean	Std. Dev	Std. Error	KMO and Bartlett's Test P value	df	Sig
Experimental	Baseline	1.5000	.83121	.11108	55.529	2	.000
	Midline	1.1071	.31209	.04171.			
	End line	1.0714	.25987	.03473			
Control	Baseline	1.4694	.84415	.12059	205.771	2	.073
	Midline	1.3878	.70167	.10024			
	End line	1.3673	.72726	.10389			
Total	Baseline	1.4857	.83337				
	Midline	1.2381	.54638				
	End line	1.2095	.54939				

The analysis explored mean estimates of AUDIT scores for the experimental and control groups at baseline, midline, and end line. PCA is a variable reduction technique that shares many similarities to the exploration factor analysis. Its aim is to reduce a larger set of variables into a smaller set of artificial variables called principal components, which account for most of the variance in the original variables. In this study, PCA showed a noticeable reduction in alcohol use mean across the assessment time among the participants in the experimental group. This was seen from baseline to

midline and from midline to end line among the participants. Concerning the control group, the reduction in alcohol use among the participants from baseline to midline and from midline to end line was minimal.

At the experimental group, the mean of AUD among participants treated with motivation interview therapy (MIT) at baseline was 1.5000 with a standard deviation of .83121. At midline, after treatment with MIT, the mean reduced to 1.1071 with a standard deviation of .31209, and at end line assessment, the mean alcohol use reduced to 1.0714 with a standard deviation of .25987.

The KMO and Bartlett's Test of effectiveness indicated that the reduction in mean was because the intervention was significant (p=0.0001). Likewise, at the control group, the mean AUD among participants at baseline was 1.4694 with a standard deviation of .84415. There was no treatment among participants in the control group, yet, the mean alcohol use reduced at midline to 1.3878 with a standard deviation of .70167, and at end line to 1.3673 with a standard deviation of .72726. The KMO and Bartlett's Test of effectiveness indicated that the reduction in mean in the control group was insignificant (p=0.073).

Figure 4.3 presents the mean AUD at baseline across the research groups.

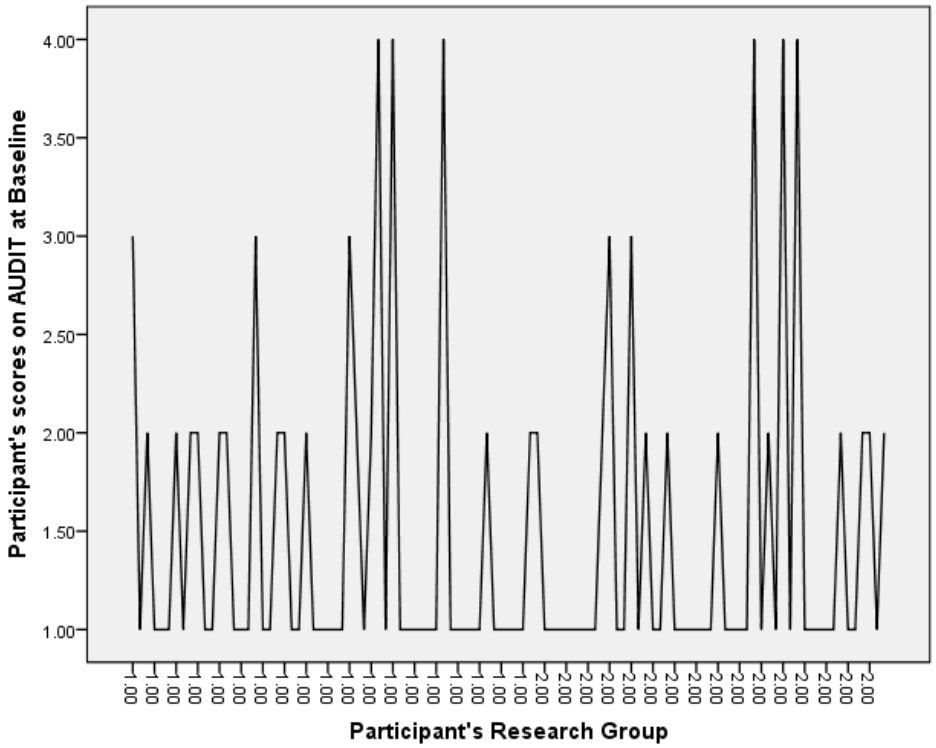

Figure 4.3: Frequency of Participant's Scores at Baseline (Sequence Plot)

Item 1 represents the experimental group while item 2 represents the control group as indicated in Table 4.21.

In the same way, as presented in Figure 4.3, Figure 4.4 demonstrates the mean AUD at midline across the research groups.

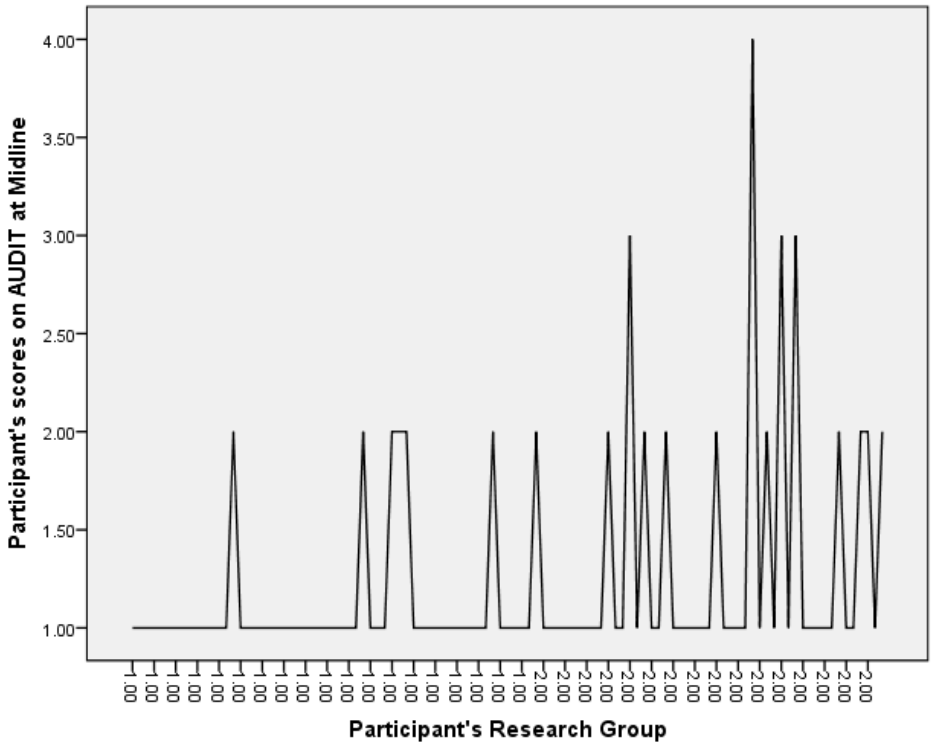

Figure 4.4: Frequency of Participant's Scores at Midline (Frequency Plot)

Item 1 represents the experimental group, while item 2 represents the control group, as indicated in Table 4.21. A noticeable decline in mean was seen at Item 1 (experimental) as opposed to the reduction in mean at Item 2 (control).

Figure 4. 5 depicts the mean AUD at end line across the research groups.

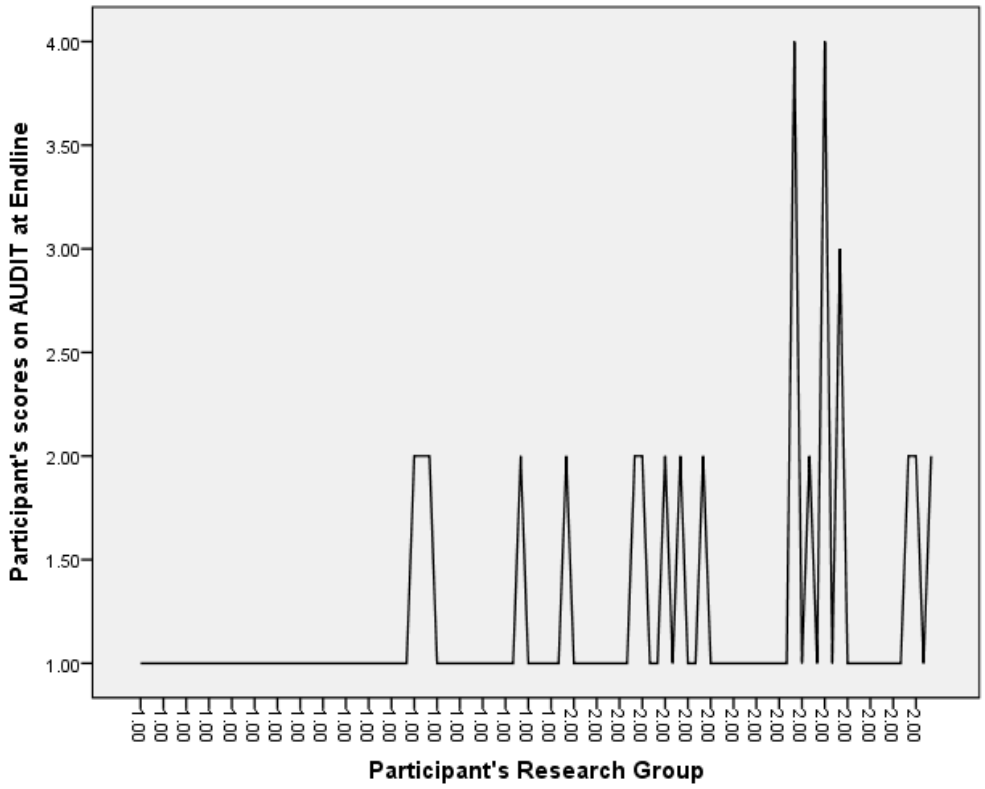

Figure 4.5: Frequency of Participant's Scores at End Line (Frequency Plot)

Item 1 represents the experimental group, while item 2 represents the control group, as indicated in Table 4.21. A noticeable decline in mean was seen at Item 1 (experimental) as opposed to the reduction in mean at Item 2 (control).

Table 4.22 presents the independent sample T-test.

Table 4.22: Independent Samples' T-Test

		Levene's Test for Equality of Variances		T-test for Equality of Means					
								95% Confidence Interval of the Difference	
		F	Sig.	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Participant's score AUDIT at Baseline	Equal variances assumed	009	.926	187	103	.852	.03061	.16378	-.29421	.35543
	Equal variances not assumed			187	100.724	.852	.03061	.16395	-.29463	.35586
Participant's scores AUDIT Midline	Equal variances assumed	9.730	.000	704	103	.008	-.28061	.10378	-.48643	.07479
	Equal variances not assumed			2.585	64.373	.012	-.28061	.10857	-.49748	.06374
Participant's scores AUDIT at Endline	Equal variances assumed	32.236	.000	2.846	103	.005	-.29592	.10398	-.50214	.08970
	Equal variances not assumed			2.701	58.685	.009	-.29592	.1954	-.51514	.07670

This statistical model is an inferential statistical test that determines whether a significant statistical divergence exists between the means in two unrelated units. This study worked with the null hypothesis that the population means from the experimental and control groups are equal, hence, there is no significant difference in means between two groups (H_0:U_1=U_2). The equal variance assumed at baseline in means was .03061 with a standard deviation of .16378. At midline, the equal variance assumed was -.28061 with a standard deviation of .10378, whereas, at end line, the equal variance assumed was -.29592 with a standard deviation of .10398.

The value of significant level was set at 0.05, on which the study can reject the null hypothesis and accept the alternative hypothesis, that is, that the population means are not equal. The results in Table 4.22 indicate that the population means are not equal (p=0.0001). Thus, the null hypothesis that there was no significant difference in population means of the two unrelated groups was rejected. This study, therefore, accepted the alternative hypothesis. The implication of this is that the treatment at the experimental group was statistically effective to reduce the alcohol use symptoms among the participants.

Figure 4.6 shows the estimated marginal grand means of participants' AUD from baseline to midline and to end line.

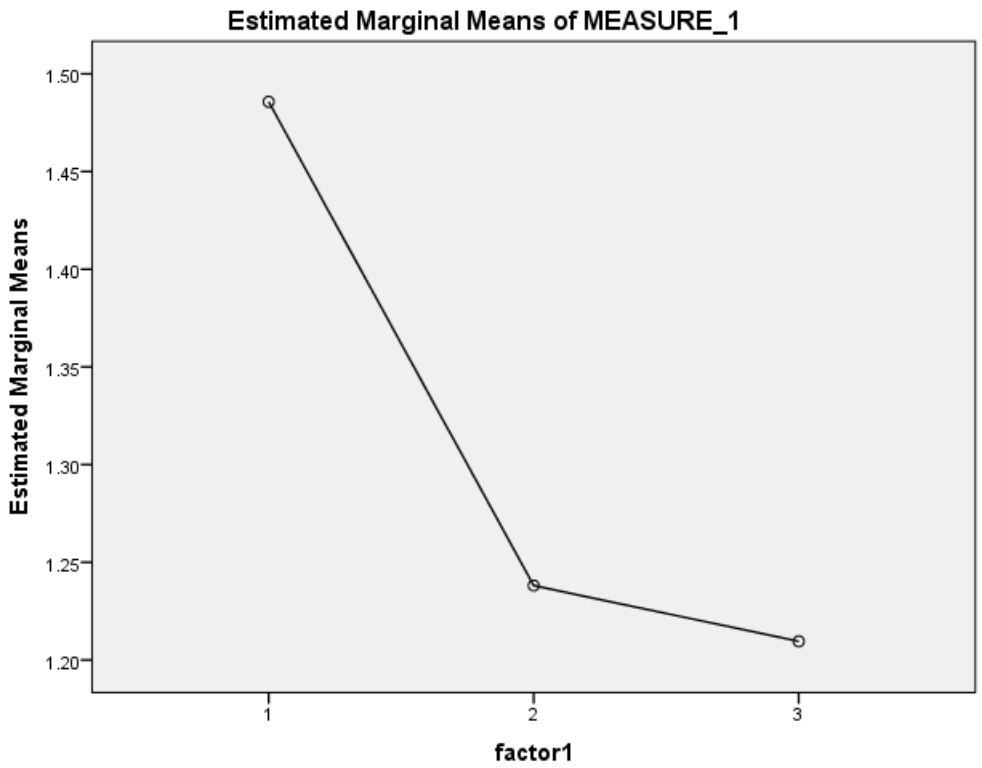

Figure 4.6: Estimated Marginal Means of Participant's AUDIT Scores at Baseline, Midline and Endline

Factor 1 represented the baseline mean, which was 1.486 ± (0.81SE). Factor 2

represented the reduction of grand mean at midline at 1.238 ± (0.53SE). Factor 3 represented the reduction of grand mean at end line at 1.210 ± (0.54SE) (see Figure 4.6).

4.7 Summary of Key Findings

The results of this study have been presented, analyzed, and interpreted out of which quite a lot of salient findings emerged, with the following as the highlights:

Regarding the prevalence of alcohol use among students at MKU, the results showed that male participants who had AUD were higher, at 10.9% in comparison to the female participants who had AUD at 5.5%. In terms of participants' age, the prevalence of alcohol use was higher among participants aged 21-23 years, at 10.2%. As regards the participants' year of study, the prevalence of AUD was higher among the 4th year participants, at 5.9%. In addition, about the participants' place of residence, the prevalence of AUD was 7.7% among participants who lived with their family. Regarding participants' marital status, the prevalence of AUD was 15.8% among the participants who were single but not dating. Generally, the result from this study also showed that the prevalence of AUD among the students of MKU was 16.3%.

With reference to the factors that exposed MKU students to the risk of using alcohol, this study found that that the participants whose parents were separated or divorced were at the risk of alcohol use (p=0.005). The study also discovered that participants whose parents were single were statistically at risk of using alcohol (p=0.018). These results seem to suggest that the marital status of the parents of the participants put the participants at risk of using alcohol.

Further, on the risk factors of AUD among students of MKU, this study found

that seeing the father using alcohol contributes to AUD among the participants (p=0.018). In addition, seeing father taking alcohol excessively served as a contributing factor of AUD among the study participants (p=0.006). It can, therefore, be deduced from this study that the drinking behavior of participants' father was a risk factor of AUD among the participants. It also emerged that participants seeing mother using alcohol was not statistically predictive of participants of participant's use of alcohol (p=0.988). However, when the participant's mother takes alcohol excessively, it becomes a risk factor for AUD for the participant (p=0.011). Additionally, seeing friends using alcohol is scientifically established to contribute to AUD among the participants (p=0.002).

Moreover, participants seeing friends taking alcohol excessively was also found to be significant as a risk factor of AUD among the participants (p=0.010). The findings of this study also revealed that the participants' going to parties where alcohol is accessed contributed to AUD (p=0.001). This result seems to suggest that the behavior of alcoholism can be acquired by observing and imitating others. Further, the findings showed that when the participants' associates such as father, mother, guardian and friends use other illicit drugs, the behavior is not necessarily predictive of alcohol use among the participants (Ps>0.005).

Further findings from this study showed that there was no significant association between the participant's father using other illicit drugs and the participant doing the same (p=0.166), mother using illicit drugs and participants doing so as well (p=0.284), and guardian using illicit drugs and the participants doing the same (p=0.072). However, this study found that there was a significant difference in means of participant's friends using other illicit drugs and participant also using the drugs

(p=0.0001).

As regards the common comorbidities among students at MKU who use alcohol, the study found that AUD, depression, and anxiety are statistically correlated (p=0.055). The Intraclass correlation coefficient test (ICC) that measures the reliability for alcohol, depression, and anxiety clusters found a high ICC (p=0.0001), which means that depression, anxiety, and alcohol use are comorbid.

About efficacy, of MI therapy in the treatment of AUD among the participants at MKU, this study's findings revealed that the MI therapy was efficacious in reducing the symptoms of AUD among the participants (p=0.0001).

4.8 Summary

In this chapter, the findings from the study have been presented. Various findings based on the data obtained via the socio-demographic questionnaire and psychological instruments have been presented, analyzed, and interpreted. The significant findings have been highlighted objective by objective, and the null and alternative hypotheses within various objectives have been equally tested and reported. In the next chapter, the study findings are discussed, conclusions made based on the findings, and recommendations drawn.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the findings of the study are discussed with respect to the study objectives, and conclusions and recommendations are made for the institutions and for further research.

5.2 Discussions of Key Findings

This research assessed the efficacy of motivational interviewing (MI) therapy on the reduction of alcohol use disorder (AUD) among students in a Kenyan private university. Screening was done to determine those that were eligible for the study. Evaluation of the participants was done at baseline, midline and end line using a researcher-generated questionnaire and standardized psychometric instruments. Finally, the effect size of the therapeutic approach was evaluated to determine the efficacy.

5.2.1 Prevalence of alcohol use disorder among students in MKU

The first objective of the study sought to establish the prevalence of AUD among students of MKU who participated in the study. The prevalence of AUD among students in MKU was required to help the clinicians to determine the great need of clinical services, awareness, psychoeducation and plans by clinical psychologists to treat AUD appropriately. It was also considered necessary for helping to manage and prevent the increasing ration of AUD in private universities in Kenya and most especially at MKU as a case study. Prevalence of alcohol use was rated with AUDIT and a researcher-generated questionnaire. The AUDIT, an

established instrument, is a 10-item questionnaire that was developed for the purpose of screening risky alcohol consumption. It has been reported to be authentic and consistent for use in primary care population (Aalto, Alho, Halme, & Seppa, 2011). Also, its acceptable reliability and validity has been demonstrated on a population basis (Bergman & Kallmen, 2002).

The 10-item AUDIT scores for each question range from 0 to 4, with the first response for each question (for example, never) scoring 0, the second (such as less than monthly) scoring 1, the third (for instance, monthly) scoring 2, the fourth (for instance, weekly) scoring 3, and the last response (for example, daily or almost daily) scoring 4. For the item questions 9 and 10, which have only three responses each, the scoring was 0, 2, and 4. A total score of 8 or more on the AUDIT is associated with harmful or hazardous drinking, a score of 13 or more in women and 15 or more in men is likely to indicate alcohol dependence. However, for the purpose of rating the prevalence of AUD, a score of 7 or less is considered to be non-clinical alcohol use and cannot be classified to be AUD. Meanwhile, a score of eight or more is considered to be clinical alcohol use; hence, it is classified as AUD

In the prevalence study of AUD among the students of MKU, the results indicated that male students who had AUD were higher, at 10.9% in comparison to the female participants who had AUD at 5.5%. This finding supports a study conducted in Iraq where alcohol consumption was reported to be higher among male university participants, at 19.7% as opposed to the female participants, at 0.8% (Al-Ameri, Al-Badri, & Lafta, 2016). In a similar study conducted among university students from selected countries of the Carpathian Europe, results indicated that the prevalence of AUD among university students in Poland was higher among male

participants (14.1%) as opposed female participants (0.7%). In Slovakia, male participants had a higher prevalence (8.3%) than the female participants (2.3%); while in Ukraine, the male gender was also reported to be higher (8.9%) compared to female students (3.3%). In Romania, the prevalence of AUD was reported to be higher (3.75) among male university students as opposed to the female students (1.5%) (Zadarko-Domaradzka et al., 2018).

Interestingly, in a cross-sectional study in Nepal, researchers reported a correlation between depression and AUD. However, the prevalence of depression was reported to be higher among female than male participants (RR=1.48, P=0.009). In contrast, the prevalence of AUD was higher among male participants than female participants (males, 19.8% and females 1.1%). The rates of AUD were lower among females (RR=0.49, P=0.0001) (Luitel, Baron, Kohrt, Komproe, & Jordans, 2018). As this study queried why males were more predisposed to AUD than their female counterparts, WHO (2018) suggested that a variety of factors were responsible for male vulnerability at the individual and environmental level. The factors affect the levels and patterns of alcohol consumption and the magnitude of alcohol-related problems in populations. Environmental factors, including economic development and cultural perspectives such as norms restricting women from drinking alcohol, could be some of the reasons for men's tendency to consume alcohol more than females (WHO, 2018).

Alcohol consumption varies greatly depending on gender, age, and region. This study found that the prevalence of alcohol use was proportionally higher (at 10.2%) among participants aged 21-23 years. These results concur with several studies across the world. For instance, in both Canada and Australia, risky alcohol

drinking is associated with university students aged 20-24 years (Sanchez-Ramirez, Franklin, & Voaklander, 2017). In addition, studies among the Swedish population showed that the 18-29 years age groups accounted for almost one-third of people who drink dangerously (Bendtsen, Karlsson, Dalal, & Nilsen, 2011). Also, the results of this study align with those of a study published in 2017, which compared alcohol consumption for the periods 2001-2002 and 2012-2013. The study noticed a remarkable increase in the percentage of students aged 21-24 years who drink riskily in the American population (Grant et al., 2017). This study also agrees with Brandao, Correia, De Farias, Antunes, and Da Silva (2011) that university students are a special group of young adults as far as alcohol consumption is concerned. AUD is pronounced among students aged 21-23 years owing to increased independence, reduced parental supervision, and more social contacts potentially responsible for the increased consumption of alcohol in this group.

As regards the participants' year of study, the prevalence of AUD was 5.9% among the 4th year participants. Several studies have indicated that there was a significant association between a participant's year of study and AUD among university students. However, this study seems to contradict several recent findings on prevalence. For instance, in a prevalence study of alcohol abuse among Egerton University students, the researcher found that the prevalence of the phenomenon among 2nd year students was at 26.7% (Boitt, 2016). A similar study in Ireland, UK showed the prevalence of alcohol use among 1st year university students, contrary to this study (Davoren et al., 2016). Several other studies seem to concur with Davoren et al. (2016) where the prevalence of AUD has been reported to be among 1st year university students but decreases as the year of study increases (Al-Ameri et al., 2016;

Mekonen, Fekadu, Chane, & Bitew, 2017; Zadarko-Domaradzka et al., 2018).

Additionally, this study established the prevalence of AUD among participants living with their family members (at 7.7%). These findings also contradict some of the studies which record a higher prevalence among university students who lived with colleagues in school. For instance, Boitt (2016) reported that a high frequency of alcohol use by university students was noticed among participants who lived with roommates in hostels as against participants who lived with parents (Boitt, 2016). Similarly, in a study to find the alcohol consumption and associated socio-demographic factors among medical students in an urban locality, the researchers reported that the prevalence of AUD was high among students who lived in school hostels (54.9%) as opposed to those who lived at home at 44.1% (Halgar, Anandi, Indupalli, Biradar, & Reddy, 2019). A previous study conducted in Nigeria also concured with these findings that university students who lived among peers in school hostels were more vulnerable to developing AUD than other colleagues who lived among family members (Chikere & Mayowa, 2011).

Likewise, in terms of participants' marital status, the prevalence of AUD was 15.8% among the participants whose marital status was single but not dating. These findings correspond with those of a study conducted among university students in Southern Iran, where it was reported that the prevalence of AUD was more among university students that were singles (at 16.1%) compared to other marital statuses (Heydari et al., 2015). Other studies also aligned with the findings of this study and reported that university students that were single drink more riskly than their married counterparts (Castario-Perez & Calderon-Vallejo, 2014; Lamberti et al., 2017; Mekonen et al., 2017).

Further, this study found that the grand prevalence of AUD among the students of MKU was 16.3%. This finding compares with the results of a similar study conducted among students of Egerton University Kenya, which established a prevalence of AUD at 21.1% (Boitt, 2016), higher than the 16.3% established by the current study. This study observed that the prevalence of AUD varies across the globe while in some places studies indicate that actual prevalence of alcohol use on campuses was not accurately known (Young & de Klerk, 2008). For instance, researchers have reported that the prevalence of AUD among the university students in Bagdah, Iraq was 12.2% (Al-Ameri et al., 2016).

The findings of this study were slightly higher than in a prevalence study in Italy which reported a 16.1% AUD prevalence among the universities students (Lamberti et al., 2017). The prevalence of hazardous alcohol drinking among private university students in Spain was reported to be 21.6% (Moure-Rodriguez et al., 2016). Comparatively, a recent study among medical students in an urban university reported the prevalence of alcohol consumption to be 25.4%, whereas the prevalence of hazardous drinking habits was 19.2%. Similarly, the prevalence of alcohol dependence among medical students in an urban locality was reported as 8.7% (Halgar et al., 2019).

5.2.2 Factors that put MKU students at risk of alcohol use

In the second objective, this study sought to assess the factors that led MKU students to use alcohol. The goal was to determine whether the socio-economic demographic characteristics of the participants and their alcohol use scores on AUDIT were correlated. The study used logistic model of regression to analyze the probability that the dependent binary variable is related to one or more nominal or ordinal

independent variable. The participant's socio-demographic variables that were hypothesized as risk factors to alcohol use were not significantly related. However, this study found that participants whose parents were separated or divorced put the student at risk to alcohol use (p=0.005).

Researchers have identified parental divorce or separation as one of the major causes of adverse childhood events. It is believed to increase the subsequent risk of alcohol dependence and other problems across adolescence and early adulthood. Still, its influence on early stages of alcohol involvement has only recently been explored. Parental divorce and the initiation of alcohol use in early adolescence were also found to be correlated (Jackson, Rodgers, & Sartor, 2016).

The results of this study concur with several studies that have linked parental divorce/separation with university students' hazardous use of alcohol. For example, from a recent research conducted in Oslo, Norway, it was reported that parental divorce that happens when the children are in teenage or younger, can be connected with risky alcohol consumption and cigarette smoking (Zeratsion et al., 2014).

Similarly, an analysis of data from the 2001-2002 national epidemiologic survey on alcohol and related conditions in the US estimated the main and interaction effects of parental divorce and alcohol abuse on lifetime suicide attempt. The study indicated that there was a strong statistical probability that adolescents, whose parents separated or divorced, were at risk of alcohol abuse and suicide attempts (Alonzo, Thompson, Stohl, & Hasin, 2014). Yet another study in Thailand affirmed this report that adolescents whose parents were separated or divorced were at risk of AUD and later in life attempted suicide (Luecha, Peremans, Dilles, & Van Rompaey, 2019).

Further, in a study in 2013, WHO reported the results of a logistic regression

that sought to establish the predictive probability of adverse childhood experiences among university students in Turkey that were alcohol dependent. Two thousand two hundred and forty-four participants answered the question "Are your parents divorced or ever separated?" The response rate was 99.4%, and of these, 84.7% of alcohol-dependent participants with separated parents lived with stepmothers and 12.9% with stepfather (WHO, 2014).

Childhood adversity encompasses a wide range of life events that include physical and sexual abuse, witnessing violent events, environmental deprivation, and parental divorce/separation. Out of these, researchers have indicated that divorce/separation is one of the most commonly validated childhood events that are capable of precipitated AUD significantly at the adolescent stage of human development (Green & Piel, 2009; Green et al., 2010; Rothman, Edwards, Heeren, & Hingson, 2008). Additionally, it was reported that youth who experience parental divorce/separation show elevated alcohol involvement into adulthood, including heavy drinking and alcohol-related problems as well as lifetime alcohol abuse and dependence (Strine et al., 2012; Thompson, Alonzo, & Hasin, 2013).

The results of this study also showed that the participants with single parents were statistically at risk of using alcohol (p=0.018). These results concurred with a multilevel analysis that sought to assess the impact family dynamics had on intense alcohol use among European adolescents. The findings showed that there are negative effects on the social behavior of children related to supervision at homes, regardless of whether the child has both parents present at home or not, something that is a key determining factor of delinquency (Kask, Markina, & Podana, 2013). In a similar study, it was reported that adolescents leaving in single-parent homes are at a higher

risk of engaging in hazardous alcohol consumption (White & Halliwell, 2010). Moreover, two studies (Elgar, Roberts, Parry-Langdon, & Boyce, 2005; Oman et al., 2007) acknowledged that alcohol consumption levels among the youth were higher amongst those from single-parent homes compared to those residing in two-parent homes. Also, researchers in a recent study discovered that adolescents living with their two birth parents involved themselves in heavy alcohol consumption on a lesser scale in comparison to those staying in any other setups (Luecha et al., 2019).

The results of this study seem to suggest that the marital status of the parents of the participants put the participants at risk of alcohol use. Recent research has suggested that family members often play an essential role in the lives of those who abuse alcohol and other drugs. This seems to be in line with this study. For example, in a study to examine the role of family structure in preventing and intervening with substance use and misuse among young people, the researchers identified a strong connection between disrupted family relationships and alcohol and other drug addiction among youth (Velleman, Templeton, & Copello, 2005).

A similar study indicated that the majority of participants that were diagnosed with AUD had experienced significant painful and traumatic childhoods in their families of origin, which contributed to their subsequent addictive behavior. Specifically, it was reported that significant numbers of AUD participants had suffered from various forms of family disruption, marital breakdown in their family, physical and psychological abuse, depression, and ill health (Vimpani, 2005). A recent study also affirms that family conflict, family dysfunctions, poor communication, parental drinking, and parental permissiveness increase the risk of

alcohol and substance use among young people (Jacob, MacArthur, Hickman, & Campbell, 2016). On the contrary, it has been noted that the family environment such as parental monitoring, family closeness, frequent communication, and family disapproval are protective mechanisms, and help to delay initiation to alcohol use (Latendresse et al., 2008).

Further, this study found that participants seeing father using alcohol was a risk factor of AUD (p=0.018) and similarly, seeing father taking alcohol excessively was established statistically to be a contributing factor of AUD among the study participants (p=0.006). This study asserts that drinking behavior of participant's father was a risk factor of AUD among the study participants. These findings coincide with the outcome of a research by Kuhn and Slabbert (2017) on the effects of a father's alcohol misuse on the wellbeing of his family. These researchers reported that when the father becomes alcoholic or drinks alcohol excessively, the family becomes dysfunctional, subsequently, disintegrating.

Findings also indicated that if the family does not function as a unit, the children, especially ages 14 and 17 years drink more dangerously (Kuhn & Slabbert, 2017). The result of this study also aligned with Fisher and Harrison (2013), in their assertion that the alcohol behavior of a father has severe consequences for the family functioning. According to the authors, the couple subsystem is subjected to severe challenges that usually lead to conflict, domestic violence, or a breakdown of the family relationships. The children imitate the alcoholic behavior of their father, which is to drink hazardously (Fisher & Harrison, 2013).

Another recent research probed links between parental drinking and the long-term risk for mortality in offspring, with a focus on clinically diagnosed alcohol

disorders. The outcome of the research was that sons' risk of alcohol-related mortality increased with their fathers' alcohol consumption across all consumption levels (Landberg, Danielsson, Falkstedt, & Hemmingsson, 2018). Further, in a 20-year prospective, multi-method study of 83 fathers and their 125 children, factors contributing to child alcohol use by the age of 13 years were considered and among other factors, an association between fathers' alcohol use and children's use was established (Kerr, Capaldi, Pears, & Owen, 2012).

This study also discovered that participant seeing mother using alcohol was not statistically predictive of the participant's use of alcohol ($p=0.988$), but that when the mother uses alcohol excessively, it becomes a risk factor of AUD among the participants ($p=0.011$). This result correlates with the results of a study that investigated gender disparities in the associations between adolescents' alcohol use behavior and perceived parental alcohol use behavior. The latter study indicated that the drinking behavior of boys was correlated with the drinking behavior and attitudes of their fathers but not with those of their mothers (Hung, Chang, Luh, Wu, & Yen, 2015). Among boys, having a non-drinking father who was against underage drinking, a non-drinking father who was positive towards underage drinking, or a drinking father who was against underage drinking significantly decrease the likelihood of alcohol consumption. In contrast, maternal behavior and attitude were not significant influences (Hung et al., 2015).

However, it is noted that several studies on the influences of fathers and mothers' drinking behaviors on the drinking behaviors of their children have not shown consistent results. According to a research by White, Johnson, and Buyske (2000), paternal drinking behaviors influence the drinking behaviors of sons, whereas

maternal drinking behaviors influence the daughters' drinking behaviors. Other researchers have argued that the influence of maternal drinking behaviors on children's drinking behaviors is greater than that of paternal drinking behaviors (Van Gundy, 2002); whereas, later studies have reported that while fathers significantly influence the excessive drinking behaviors of their children, mothers do not (Coffelt et al., 2006; Yeh, 2006).

Further, other studies found that male adolescents with alcohol-abusing mothers were less likely to use alcohol excessively than their counterparts whose mothers did not abuse alcohol, unlike adolescents with alcohol-abusing fathers (Haugland, Holmen, Ravndal, & Bratberg, 2013). Suffice it to say; these studies consistently emphasise that the individual drinking problems of parents influence the drinking problems of their male and female children.

Furthermore, this study found that participants seeing friends using alcohol is scientifically established to be a contributing factor of AUD ($p=0.002$) and participants seeing friends taking alcohol excessively was also viewed to be a significant risk factor of AUD ($p=0.010$). Thes results are in accordance with findings by several researchers who have conducted similar studies on a similar population. For instance, Guyer, Choate, Pine, and Nelson (2012) reported that as adolescents become more autonomous, the influence of the peer group becomes more important as family influence declines. The study noted that having friends who drink increases the likelihood that young people will drink too.

Additionally, it was reported that adolescents seeing a clustering of risk-taking behaviors such as smoking, drinking, drug-taking, and sexual activity is influential to their behavior. Hence, the peer effects on risk-taking are strong in the age group, and

adolescents affliated with substance-using peers are at greater risk of also engaging in similar behaviours (Marshall, 2014). This is because peer acceptance is a potent reward for adolescents and is associated with high self-esteem and social competence (Guyer et al., 2012). Another study also noted that having older friends and spending more time with drinking friends are likely to promote excessive drinking (Heron et al., 2013).

Additionally, the findings of a UK-based research indicated that conduct problems and close friends' substance use were associated with increased adolescents' substance use. According to the results, peer substance use moderated the relationship between conduct problems and alcohol use problems in the presence of substance-using friends (Glaser, Shelton, & van de Bree, 2010). A related research also found that females and males shared several factors of hazardous alcohol use, and perception of peer drinking emerged as a strong factor for both gender (Jalling, Elgan, Tengstrom, & Birgegard, 2017).

From an evaluation of the effect of peer social groups on adolescents' alcohol consumption induction, Mundt (2011) reported that "both an adolescent's friends' alcohol use and the adolescent's social network characteristics displayed an independent main effect on alcohol initiation" (p. 1). The findings of Mundt's study suggested that "…adolescents are at heightened risk of alcohol use onset because of their position in the social network in relation to their friends and the friends of their friends" (p. 1) who take alcohol.

The present study also established that participants' going to parties where alcohol is accessed is a contributing factor of AUD (p=0.001). This concurs with a qualitative research which reported that adolescents consumed alcohol for the first

time mainly in parties of friends as well as relatives' homes during family feasts, and at street parties such as carnival or balls (Neves, Teixeira, & Ferreira, 2015). A comparable qualitative research conducted by Monash University on 'Parents, Parties and Adolescent Alcohol Use' indicated a significant association between participants' easily accessing alcohol at parties and alcohol misuse. The study queried the supply of alcohol to adolescents at parties, and reported several sources of supply. For instance, about 48% of the participants indicated that alcohol drinks were supplied by friends (fellow adolescents), 26% reported that their parents supplied the alcohol drinks at the partied, and 11% were supplied by siblings (Ward & Snow, 2009). Conclusively, this result seems to suggest that alcoholic behavior can be acquired by observing and imitating others.

Moreover, findings from this study showed the participant's associates' (such as father, mother, guardian, and friends) use of other illicit drugs does not necessarily become a risk factor of alcohol use among the participants (Ps>0.005). Further, according to the findings, there was no significant association between the participant's father using other illicit drugs and the participant using the same (p=0.166), mother using illicit drugs and participant's use of the same (p=0.284), and guardian using illicit drugs and the participant's use of the drugs as well (p=0.072). However, this study found that there was a significant difference in means of participant's friends using other illicit drugs and participant using the same (p=0.0001).

The above finding correlates with a cross-sectional study in Brazil's - among 891 adolescents - finding that religion-based friendships, as well as sports/culture-based friendships, remained significantly associated with illicit drug and alcohol use.

Further findings from the study showed that adolescents who lived in less vulnerable areas had a higher chance of drug use as opposed to those living in more vulnerable areas. The study also established that other forms of relationships and intimacy appear to be pointers to peer influence towards use of other illicit drugs. However, religion-based friendships seem to demonstrate a protective effect against lifetime illicit drug use (Jorge et al., 2018).

5.2.3 Common comorbidities among MKU students who use alcohol

As it's third objective, this study sought to determine the common comorbidities among students using alcohol at MKU. In this regard, the study found that a statistical correlation (p=0.055) between AUD, depression, and anxiety. The Intraclass correlation coefficient test (ICC) that measures the reliability for alcohol, depression, and anxiety clusters found a high ICC (p=0.0001); inferring comorbidity between depression, anxiety, and alcohol use. These findings correlate with other researches that have been done globally.

A strong association between AUDs, mood, and anxiety disorders has been recognized worldwide (Morley et al., 2016). For instance, a meta-analysis of epidemiological surveys from 1990 to 2014 reported a very high ICC - where odds ratio of 2.42 for co-occurring AUD and major depression; and an odds ratio of 2.11 for co-occurring AUD and any anxiety disorder was established (Lai, Cleary, Sitharthan, & Hunt, 2015). Alike studies also found a co-occurring strong correlation coefficient between illicit drug use disorder and major depression, followed by illicit drug use and any anxiety disorder, alcohol use disorders and major depression, and alcohol use disorders and any anxiety disorder (Heckers, 2015; Kraemer, 2015).

Further, another research reported that an increased propensity to drink in

negative emotional situations was associated with comorbid major depression and anxiety, but notably differed by sex and was found to be stronger in males compared with females (Karpyak et al., 2016). Researchers have reported that anxiety is highly prevalent among all patients seeking addiction treatment, and for those with AUDs, specifically, the prevalence of anxiety disorders is believed to be as high as 33% (Smith & Randall, 2012). It was noted that patients with AUD consume alcohol due to its sedative effects as a way to self-medicate the anxiety they experience when they are not drinking (Nguyen, Mirbaba, Khaleghi, & Tsuang, 2017). At the same time, it was added that their anxiety may be a manifestation of an AUD in the form of withdrawal symptoms. Regardless of the phenomenology, clinicians are to recognize a vicious cycle that has been established in these patients to the point where both the anxiety and AUD require intensive treatment to improve functioning (Nguyen et al., 2017).

A study by Smith and Brook (2010) looking at "the prevalence and clinical characteristics of comorbid generalized anxiety disorder (GAD) and alcohol use disorders (AUD) in a front-line outpatient substance abuse clinic" (p. 1) reported that "the onset of GAD occurred prior to AUD in 67% of comorbid cases, with an average time lag of 12.5 years among individuals with primary GAD" (Smith & Brook, 2010, p. 1). The study by Smith and Brook (2010) also reported that the respondents who had comorbid GAD-AUD "endorsed higher levels of worry-reduction alcohol expectancies, and 55.6% of comorbid participants had a history of suicide attempts" (p. 1). In addition, it was noted that "comorbid participants were more likely to indicate that worry interfered with their substance abuse treatment, and to indicate interest in concurrent treatment targeting their worry" (Smith & Brook, 2010, p. 1).

The report of a study among 5,877 AUD patients showed that social anxiety disorder (SAD) is extremely concurrent with AUD. However, it was worth noting that SAD only linked to alchohol dependence upon controlling for appropriate circumstances (Buckner, Timpano, Zyolensky, Sachs-Ericsson, & Schmidt, 2008). Additionally, SAD is also linked to further serious alcohol impairement and that this connection is not well explained by other pathology (Buckner et al., 2008). The genesis of SAD preceded the beginning of alcohol dependence; implying that SAD raises vulnerability for alcohol misuse dependence. In fact, the result clearly indicated that SAD might possibly be a contributing factor for alcohol reliance (Buckner et al., 2008).

It has also been reported in a study conducted in Australia that 39% of individuals with SAD and GAD also meet criteria for depression (Andersson, Magnusson, Carstensen, & Borgquist, 2011; Tiller, 2012). About 85% of patients with depression also experience significant symptoms of anxiety. In comparison, comorbid depression occurs in up to 90% of patients with anxiety disorders. Additionally, both anxiety and depression are reported to be associated with both substance use disorder, and AUD (Goncalves, Pachana, & Byrne, 2011).

5.2.4 Efficacy of MI therapy on alcohol use disorder among MKU students

The fourth objective of this study was to assess the efficacy of MI therapy to reduce the symptoms of AUD among the participants. Notably, most clinicians express MI with 5 general principles which include expressing empathy, developing discrepancy, avoiding argumentation and confrontation, adjusting to the client's resistance, and supporting self-efficiency and optimism. In their study, Mayfield and Mayfield (2012) argued that self-efficacy connects to a person's motivational level

that is foundational for change. They added that the technique is beneficial when clients verbalized low self-efficacy about making behavioral change. Further, they found that professionals who used motivational language increased behavioral change in clients up to 34% more compared to professionals who do not use the technique. It is with this background that this study focused on the self-efficacy of MI in the reduction of AUD and limited itself to the efficacy of MI.

The findings showed that MI is efficacious in reducing the symptoms of AUD among the participants ($p=0.0001$). Miller and Rollnick (1991) indicated that clients do not have a real sense of self-efficacy and therefore are unable to believe that they can maintain behavioral change. Improving self-efficacy requires eliciting and supporting hope, optimism, and accomplishing change. This requires the therapist to recognize the client's strengths and use them to help create hope. Because self-efficacy is a critical component of behavior change, it is important that clinicians also believe in the clients' capacity to reach their goals. This was a major premise in this study, as the participants were taken through the therapeutic process.

Several other studies have illustrated positive results regarding the efficacy of MI. The outcome of this study agrees with many of those studies that have been done to test a variety of behavioral issues, including the efficacy of MI therapy in the treatment of AUD and addictive behaviors. However, most of the studies did not focus on self-efficacy but on a combination of the principles and other therapeutic approaches. For instance, Lundahl et al. (2010) did a meta-analysis in which they focused on 119 studies covering 25 years of research on MI therapy. The meta-analysis targeted substance use such as tobacco, alcohol, drugs, and marijuana; and health-related behaviors such as diet, exercise, safe sex, gambling and engagement in

treatment, as its outcomes. According to the findings, MIT was significant in reducing the severity of substance use but non-significant in reducing health-related behaviors (Lundahl et al., 2010).

A similar meta-analysis of MI therapy focused on 48 studies among 9,619 participants who were presenting with alcohol dependence, substance abuse, sedentary behavior, and psychiatric conditions. Sequel to significant outcomes of the treatment, the studies concluded that the emerging evidence for MI therapy in medical care settings suggests that the therapy provides a moderate advantage over comparison interventions, and could be used for a wide range of addictive behavioral issues in healthcare (Lundahl et al., 2013). Correspondingly, other systematic reviews focusing on the effectiveness of MI in a health setting considered the relevance for multi-morbidity with hazardous alcohol consumption. Twelve meta-analyses pertinent to multi-morbidity with AUD or dependence were identified. The MI intervention was found to have a statistically significant effect on behavioral outcomes with multi-morbidity, especially depression and anxiety disorders (McKenzie, Pierce, & Gunn, 2015).

Additionally, in a randomized controlled clinical trial based in a large outpatient psychiatry program in an integrated healthcare system in Northern California, US, the 307 participants in the study were found to have been involved in harmful alcohol use and drug use. The MI therapy was found to be more effective in control than in substantially reducing the rate of cannabis use and hazardous drinking (Satre et al., 2016). Similarly, Samson and Tanner-Smith (2015) compared the effectiveness of MIT, CBT, and psycho-educational therapy (PET) interventions in treating heavy alcohol drinking in college students. The participants treated with

MIT/MET had greater effect size and significant treatment outcomes compared to the ones treated with CBT and PET (Samson & Tanner-Smith, 2015).

Previous comparative studies to evaluate the effectiveness of combining CBT and MI therapy to treat comorbid clinical and sub-clinical AUD and major depression; and to estimate the effect of this compared with those treated with CBT alone, as control was conducted (Riper et al., 2013). CBT/MI combination proved more effective for treating sub-clinical and clinical AUD and MDD compared with controls for overall effect sizes at post-treatment for decrease of alcohol consumption and for decrease of symptoms of depression significantly (Riper et al., 2013).

In this study, the mean of AUD among the experimental group was 1.5000 at baseline, 1.1071 at midline and 1.0714 at end line. The KMO and Bartlett's Test of effectiveness indicated that the reduction in mean was significant (0.0001) after the intervention. This study contrasted with a study by Walpole et al. (2013) which evaluated the efficacy of MI as an intervention for promoting self-efficacy and weight loss in overweight obese youth. Results of the study showed that MI did not enhance self-efficacy above that of the control intervention and that there were no significant between-group differences for weight-related outcomes at the 6-month follow-up (Walpole et al., 2013). Therefore, the study made an important contribution toward understanding effective treatment options for obese children and adolescents and concluded that more than one kind of intervention could be effective in improving self-efficacy and possibly weight outcomes.

Additionally, the findings of the current study agree with Chariyeva et al.'s (2013) study, which established that as MI time and number of provided sessions increased, participants' sexual risk behavior decreased. The effect of MI time and number of sessions on sexual behavior was mediated by self-efficacy but not by

motivation to practice safer sex, thereby showing the approach's efficacy (Chariyeva et al., 2013). Another study by Ashouri, Zolghadri, Nehmati, Alizadeh, and Issazadegan (2015) investigated the MI's effectiveness on 'enhancing self-efficacy and improving self-concept in underdeveloped students'. According to the results, the scores of self-efficacy and self-concept of participants had a significant increase after the MI treatment (Ashouri et al., 2015). These studies continue to attest to the efficacy of MI.

A more recent research aimed at addressing the question of confidence in remaining abstinent after residential alcohol treatment. The results shed light on the importance of the self-defined, single-item measure of abstinence-related self-efficacy as a relevant predictor of future long-term drinking frequency. This is an indication that self-efficacy and motivation are interrelated in improving long-term abstinence following residential treatments and may play a substantial role in recovery from AUD (Müller, Znoj, & Moggi, 2019).

5.3 Conclusion

This study indicates that there was a high prevalence of AUD (16.3%) among university students. This is in agreement with a study by Sanchez-Ramirez et al. (2017) which reported an AUD prevalence rate of 16.1% among university students. The current study also found the prevalence rate to be high among the male participants (10.9%) as compared to their female counterparts (5.5%), probably as a result of the culture and drinking attitudes.

Further, the study determined that the marital status of the participants' parents put the participants at risk of using alcohol. Specifically, university students whose parents were either divorced, separated, or single were at risk of hazardous use of

alcohol (p=0.05). Moreover, the study found that the participant seeing the father using alcohol or using it excessively, or the mother using alcohol excessively, are factors that put the participants to the risk of AUD. The roles of friends using alcohol excessively or going to parties where alcohol is accessible cannot be over-emphasized as predictive factors of AUD. In addition, when the participants' friends use illicit drugs equally predicts the participants to also use the drugs.

The comorbidities of interest were depression and anxiety, and the study found that AUD, depression, and anxiety were statistically correlated. A high ICC was found between AUD, depression, and anxiety, which seem to suggest that the disorders are co-occurring among the participants. The efficacy of MI therapy, as an intervention approach in this study, was tested, and participants who were treated with the approach had a significant reduction in the severity of alcohol consumption. This implies that participants presenting with AUDs or hazardous alcohol drinking can freely choose to be treated with the MI therapy because of the overwhelming evidence available regarding the intervention's efficacy. This study is a contribution to MI's efficacy.

5.4 Recommendations

In view of the findings of this study, the researcher made the following recommendations:

1. University administrations, the ministry of education, clinicians, and parents need to increase awareness of the serious effects of alcohol use and enlighten students on the need to be careful in the choice of their drinking behavior. Serious and well-organized campaigns need to be done on campus at stipulated times by the campus managers and with invited professionals for

students to understand the seriousness of such endeavors.

2. Since the study showed a high prevalence of alcohol use among university students, there is need for universities to arrange for strategic therapeutic activities for different groups of students at all levels of study, including those that are almost graduating. This would help in giving the graduating students hope and helping them to have a focus outside the university.
3. Universities need to, at specific times, arrange for students to be psycho-educated on the risk factors and predictors for alcohol (as well as other drugs) use and be made aware of the mental health problems that result from alcohol use, such as depression and anxiety. This can help them to be careful about the decisions they make concerning substance use.
4. University administrations and counselors need to organize for therapy as a requirement in the universities and make it mandatory for every student. The students can go through specific hours of counseling with a therapist who would include and cover such areas as causes and effects of alcohol and substance use, life skills, and self-care. This would provide exposure on how to handle some difficult life challenges.
5. Since the study indicated that the male students have a high AUD prevalence, the community, including parents, teachers, religious leaders, and therapists need to start educating boys from early primary school concerning the dangers of falling victim to alcohol and drug use. This can help the boys to grow up with the knowledge of the problem of AUD before the vice catches up with them.
6. The findings of the study indicate that students from divorced and separated

families have a higher prevalence of alcoholism. As such, therapists at every level of learning need to put in place strategies for intervention to help such students keep away from engaging in alcoholism as a coping mechanism.

7. The enforcement of the alcohol policy needs to be enhanced to ensure that alcohol use is dealt with decisively, especially in the universities. Once enforced, the administrators would be at liberty to act when the need arises, and everyone found in contravention would be held responsible.
8. There is a need to educate parents on how their alcohol use and marital status influence their children to use alcohol. This knowledge would assist in enabling the parents to make informed behavioral decisions which would be helpful to their families and would help to cushion children from alcohol use as they grow up.

5.5 Recommendations for Further Research

This study focused on alcohol use among university students in the 18-26 years age range. Further research with a focus to establish some other developmentary specific theories, models, and methods for the effective intervention for AUD among various populations would be worthwhile.

School-based programs to reduce the onset of alcohol use and consequently reduce personal and social risk factors could be considered as a future research area.

Another area to consider for future research would be prevention and treatment systems towards reducing alcohol use problems among university students.

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APPENDICES

Appendix A: Researcher's Introduction Letter to Respondents

Dear Respondent,

My name is Rahab Gathuci, a PhD student in Clinical Psychology at Daystar University. I am carrying out a research on "Efficacy of Motivational interviewing therapy on reduction of Alcohol Use Disorder among students in Mount Kenya University". I am going to give you information and invite you to be part of this research. In case there are some words that you do not understand, please ask me to stop as we go through the information and I will take time to explain.

Your participation in this research is voluntary. It is your choice whether to participate or not. You may change your mind later and stop participating even if you agreed earlier. There will be no monetary reward to participate in the study. The information that I collect from this project will be kept confidential. Information will be put away and no one but the researchers will be able see it. Any information you have given will have a number on it instead of your name. Only the researchers will know what your number is.

You can ask me any question concerning any part of research study, if you wish to. You can also contract the lead researcher through 0722878482 or rahabgathuci@yahoo.com. Thank you.

Appendix B: Informed Consent (Experimental group)

I am aware that principal researcher in this study is Rahab Gathuci, a PhD in Clinical Psychology student at Daystar University and that she is carrying out a study on the "*Efficacy of Motivational interviewing therapy on reduction of Alcohol Use Disorder among students in Mount Kenya University*".

I have been given full information about my involvement in this research, and my experience as I go through the information and respond to questionnaires. I am aware that I will be asked to complete questionnaires on my social-demographic information, Alcohol Use Disorder Identification Test (AUDIT), if necessary, asking me about my involvement with alcohol use. I have been sensitized that I may experience some discomfort in identifying and giving some personal information during the study. However, I have been encouraged to be as truthful as possible since none of this personal information will be made public. I am also aware that this is an interventional study that will require me to be actively involved in group therapy for a period of three months. It will also require me to complete follow up questionnaires two times at 3 months' intervals. My academic progress will be also monitored during this period.

To protect my confidentiality, I have been told that I will be assigned a unique code identifier that will help collate my data for statistical analysis purposes at the end of the study. I have also been assured that all the information I give will be kept by the researcher under lock and key. I have been told that my participation is voluntary and that refusal to participate or dropping out of the study will not attract a penalty or loss of benefits in my part in way. I have also been made aware that my participation in the study may bring long-term benefits to me and that it will contribute to

empowerment of students and information of policies to alleviate alcohol use and improve academic performance among university students.

If I have questions on this research, I am allowed to contact Rahab Gathuci on 0722878482 or rahabgathuci@yahoo.com. I have read and understood the information provided above and I voluntarily accept to participate in the study.

Signature_____Date

_____

Principal researcher use only

I confirm that I have explained to the above participant who I am and the consideration for taking part of this study in observance of human research ethics. The participant and the information gathered in this study will be treated with utmost respect and confidentiality.

_____ _____

Signature Date

Appendix C: Informed Consent (Control group)

I am aware that the principal researcher in this study is Rahab Gathuci, a PhD in Clinical Psychology student at Daystar University and that she is carrying out a study on *"Efficacy of Motivational interviewing therapy on reduction of Alcohol Use Disorder among students in Mount Kenya University*".

I have been given full information about information about my involvement in this research, and my experience as I go through the information and respond to questionnaires. I am aware that I will be asked to complete a questionnaire on my social-demographic information, BDI, BAI and Alcohol Use Disorder Identification Test (AUDIT). I have been sensitized that I may experience some discomfort in identifying and giving some personal information during this study. However, I have been encouraged to be as truthful as possible since none of this personal information will be made public. I am also aware that this study will take six months and involves a baseline survey and two follow-up assessments at 3 months' intervals. My academic progress will also be monitored during this period. During the study, I will be required to attend group therapy.

To protect my confidentiality, I have been told that I will be assigned a unique code identifier that will help collate my data for statistical analysis purposes at the end of the study. I have also been assured that all the information I give will be kept by the researcher under lock and key. I have been told that my participation is voluntary and that refusal to participate or dropping out of the study will not attract a penalty or loss of benefits in my part in any way. I have also been made aware that my participation in the study may bring long-term benefits to me and that it will contribute to empowerment of students and formulation of policies to alleviate

alcohol use among university students.

If I have questions on this research, I am allowed to contact Rahab Gathuci on 0722878482 or rahabgathuci@yahoo.com. I have read and understood the information provided above and I voluntarily accept to participate in the study.

Signature_____

Date_____

……

……

Principle researcher use only

I confirm that I have explained to the above participant who I am and the considerations for taking part in this study in observance of human research ethics. The participant and the information gathered in this study will be treated with utmost respect and confidentiality.

_____ _____

Signature Date

Appendix D: Social-demographic Questionnaire

Read all the questions. Your honest answers to these questions are very important. Your answers will remain confidential, so please be honest.

Adm No: _____

Today's date _____

Year of study _____

Year of Admission_____

Major _____

Gender _____

Mode of study_____

Age in years _____

Date of Birth _____

Marital status _____

Place of residence:

On-campus hostels

Off-campus hostels

Living with family, kindly specify member you are living with:

Who pays your fees? _____

11. a) Do you have other sibling (s) in the university? Yes ◯ No ◯

b) If yes, in which university? _____

c) If public, which mode of study_____

12. a) In primary school, were you in an urban or rural school? _____

b) Was your primary school public or private? _____

13.a) In high school, were you in an urban or rural school? _____

b) Was your high school public or private? _____

14.a) What is the marital status of your parents?

Married

Divorced

Separated

Single parent

Widow

Widower

b) If your parents are divorced, separated or single, widow or widower who do you live with?

Mother

Father

Guardian

c) If your parent is widow or widower, how old were you when the other parent passed on? _____

15. What do your parents do for a living? a) Father _____

b) Mother _____

16. a) Have you ever seen your father use alcohol? ◯ Yes ◯ No

b) If yes, have you seen him drunk or taking alcohol excessively? ◯ Yes ◯ No

c) Does your father use other illicit drugs? ◯ Yes ◯ No

d) If yes, which one? _____

17.a) Have you ever seen your mother use alcohol? ◯ Yes ◯ No

b) If yes, have you ever seen your mother drunk or taking alcohol excessively? ◯ Yes ◯ No.

c) Does your mother use other illicit drugs? ◯ Yes ◯ No

d) If yes, which one? _____

18. a) have you ever seen your guardian use alcohol? ◯ Yes ◯ No

b) If yes, have you seen your guardian drunk or taking alcohol excessively?

◯ Yes ◯ No

c) Does your guardian use other illicit drugs ◯ Yes ◯ No

18. a) Do your close friends use alcohol? ◯ Yes ◯ No

b) If yes, do they use alcohol excessively? ◯ Yes ◯ No

c) Do you go to parties where there is accessibility of alcohol? ◯ Yes ◯ No

d) Do your friends use other illicit drugs? ◯ Yes ◯ No

e) If yes, which ones? _____

19.a) Do you use alcohol? ◯ Yes ◯ No

b) Do you use other illicit drugs ◯ Yes ◯ No

c) If yes, which ones? _____

d) How easily accessible is the illicit drug you use?

◯ Easily accessible

◯ Not easily

◯ Moderately accessible

20. When it comes to media, what influenced you start using illicit

drugs/alcohol?

Advertisements on TV

Advertisement on radio

Advertisement on print media

Advertisement by celebrities

Other media, please specify: _____

Appendix E: Beck's Depression Inventory

Please mark the one that presently applies to you.

1.

0 I do not feel sad.

1 I feel sad

2 I am sad all the time and I cannot snap out of it.

3 I am so sad and unhappy that I can't stand it.

2.

0 I am not particularly discouraged about the future.

1 I feel discouraged about the future.

2 I feel I have nothing to look forward to.

3 I feel the future is hopeless and that things cannot improve.

3.

0 I do not feel like a failure.

1 I feel I have failed more than the average person.

2 As I look back on my life, all I can see is a lot of failures.

3 I feel I am a complete failure as a person.

4.

0 I get as much satisfaction out of things as I used to.

I don't enjoy things the way I used to.

2Idon't get real satisfaction out of anything anymore.

3I am dissatisfied or bored with everything.

5.

I don't feel particularly guilty

1 I feel guilty a good part of the time.

2 feel quite guilty most of the time.

3 I feel guilty all of the time.

6.

0 I don't feel I am being punished.

1 I feel I may be punished.

2 I expect to be punished.

3 I feel I am being punished.

7.

0 I don't feel disappointed in myself.

1I am disappointed in myself.

2 I am disgusted with myself.

3 I hate myself.

8.

0 I don't feel I am any worse than anybody else.

1 I am critical of myself for my weaknesses or mistakes.

2 I blame myself all the time for my faults.

3 I blame myself for everything bad that happens.

9.

0 I don't have any thoughts of killing myself.

1 I have thoughts of killing myself, but I would not carry them out.

2 I would like to kill myself.

3 I would kill myself if I had the chance.

10.

0 I don't cry any more than usual.

1 I cry more now than I used to.

2 I cry all the time now.

3 I used to be able to cry, but now I can't cry even though I want to.

11.

0 I am no more irritated by things than I ever was.

1 I am slightly more irritated now than usual.

2 I am quite annoyed or irritated a good deal of the time.

3 I feel irritated all the time.

12.

0 I have not lost interest in other people.

1 I am less interested in other people than I used to be.

2 I have lost most of my interest in other people.

3 I have lost all of my interest in other people.

13.

0 I make decisions about as well as I ever could.

1 I put off making decisions more than I used to.

2 2 I have greater difficulty in making decisions more than I used to.

3 I can't make decisions at all anymore.

14.

0 I don't feel that I look any worse than I used to.

1 I am worried that I am looking old or unattractive.

2 I feel there are permanent changes in my appearance that make me look unattractive

3 I believe that I look ugly.

15.

0 I can work about as well as before.

1 It takes an extra effort to get started at doing something.

2 I have to push myself very hard to do anything.

3 I can't do any work at all.

16.

0 I can sleep as well as usual.

1 I don't sleep as well as I used to.

2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.

3 I wake up several hours earlier than I used to and cannot get back to sleep.

17.

0 I don't get more tired than usual.

1 I get tired more easily than I used to.

2 I get tired from doing almost anything.

3 I am too tired to do anything.

18.

0 My appetite is no worse than usual.

1 My appetite is not as good as it used to be.

2 My appetite is much worse now.

3 I have no appetite at all anymore.

19.

0 I haven't lost much weight, if any, lately.

1 I have lost more than five pounds.

2 I have lost more than ten pounds.

3 I have lost more than fifteen pounds.

20.

0 I am no more worried about my health than usual.

1 I am worried about physical problems like aches, pains, upset stomach, or constipation.

2 I am very worried about physical problems and it's hard to think of much else.

3 I am so worried about my physical problems that I cannot think of anything else.

21.

0 I have not noticed any recent change in my interest in sex.

1 I am less interested in sex than I used to be.

2 I have almost no interest in sex.

3 I have lost interest in sex completely.

Appendix F: Beck Anxiety Inventory

Below is a list of common symptoms of anxiety. Please carefully read each item on the list. Indicate how much you have been bothered by that symptom during the past month, including today by circling the number in the corresponding space in the column next to each symptom.

Symptom	Not at all	Mildly but it didn't bother much	Moderately- It wasn't pleasant at times	Severely- It bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding	0	1	2	3

Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3
Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky/ unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint/Lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot/cold sweats	0	1	2	3
Column Sum				

Appendix G: AUDIT

Alcohol Use Disorders Identification Test (AUDIT)

Below is list of drinks containing alcohol, which may be commonly taken in your neighbourhood. Please tick/circle ONE alcoholic drink that you take regularly.

Tusker
White cup
Guinness
Heineken
Jameson
Jack Daniels
Viceroy
Johnnie Walker
Williamson Lawsons
Famous grouse
Smirnoff vodka
Guarana
Snapp
Wine
Old monk
Malibu
Bacardi
Zappa
Bluemoon
Chang'aa (specify, dry or dilute)
Other specify _____

READ ALL THE QUESTIONS. YOUR HONEST ANSWERS TO THESE QUESTIONS ARE VERY IMPORTANT FOR YOUR HEALTH.

Because alcohol use can affect your health and interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential, so please be honest. For each question in the chart below, please circle the answer that is correct for you.

1. How often do you have a drink containing alcohol?

· Never

· Monthly or less

· 2-4 times a month

· 2-3 times a week

· 4 or more times a week

2. How many standard drinks containing alcohol do you have on a typical day when drinking?

· 1 or 2

· 3 or 4

· 5 or 6

· 7 to 9

· 10 or more

3. How often do you have six or more drinks on one occasion?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

4. During the past year, how often have you found that you were not able to stop drinking once you had started?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

5. During the past year, how often have you failed to do what was normally expected of you because of drinking?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

6. During the past year, how often have you needed a drink in the morning to get yourself going after a heavy drinking session?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

7. During the past year, how often have you had a feeling of guilt or remorse after drinking?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

8. During the past year, have you been unable to remember what happened the night before because you had been drinking?

· Never

· Less than monthly

· Monthly

· Weekly

· Daily or almost daily

9. Have you or someone else been injured because of your drinking?

· No

· Yes, but not in the past year

· Yes, during the past year

10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested you cut down?

· No

· Yes, but not in the past year

· Yes, during the past year

Appendix H: Treatment Consent

I understand that this group will meet for six times, and I have agreed to participate for that length of time. Although I do retain the right to withdraw, I agree to attend at least the first four sessions to give the group a chance. After that if, I want to leave the group I will discuss my reasons with the group before making my final decision.

I agree to attend all group meetings and to be on time for them. If some urgent circumstances force me to be late or absent, I will call in advance to notify the group leaders.

I agree that I will not reveal the names of fellow group members or details about their personal lives. Although it is all right to talk in general terms about my personal experiences in the group, I will protect the privacy of the others in the group.

I understand that this treatment is intended for people who want to abstain from alcohol or reduce their intake. I understand that I must work on remaining abstinent for this program to be most effective.

I promise to talk in the group about drinking and about craving or fears of relapse. I agree that it is essential for me to come to the session alcohol free.

I understand that I will be expected to practice and implement some of the skills we discuss in treatment. I agree to bring in the practice exercise sheet each week to discuss with the group.

I have reviewed the above statements with the group, and have agreed to abide by them

_____ _____

Participant signature Date

Therapist signature	Date

Appendix I: Self-monitoring Record

Trigger (What sets me up to use)	Thoughts and feeling (What was I? What was I feeling)	Behaviour (What did I do then)	Positive consequences (What positive thing happened?)	Negative consequences (What negative thing happened)

Appendix J: Daily Record of Urges to Drink

Date	Situation	Intensity of craving 1-100	Coping behaviour used

Appendix K: Practice Exercise

One way to cope with thoughts about using alcohol is to remind yourself of the benefits of not using, the unpleasant consequences of using, and the obstacles or high-risk situations that may make it hard to keep your commitment to abstinence. Use this sheet to make a list of 5 to 10 reminders in each category, and then transfer this list onto a pocket-sized index card. Read this card whenever you start to have thoughts about drinking.

Positive benefits of not using:

_____

_____

_____

_____

_____

Unpleasant effects or negative consequences of using:

_____

_____

_____

_____

_____

Stumbling blocks, or high-risk situations, to keep commitment to abstinence

_____

_____

_____

_____

_____

Overall level of personal commitment to remain abstinent:

None 1 2 3 4 5 6 7 8 9 10 Extremely high

Appendix L: Personal Emergency Plan: High-Risk Situation

Reminder Sheet

If I encounter a life, event that puts me in high-risk situation:

I will leave or change the situation or environment

I will put off the decision to drink for 15 minutes. I will remember that most craving is time-limited, and I can wait out-not drink.

I will challenge my thoughts about drinking. Do I really need a drink? I will remind myself that my only true needs are for air, water, food, and shelter.

I will think of something unrelated to drinking.

I will remind myself of my successes to this point.

I will call my list of emergency numbers:

NAME PHONE NUMBER

_____

_____

_____

_____ GOODLUCK!

REMEMBER: RIDING OUT THIS WILL STRENTHEN YOUR RECOVER

Appendix M: Personal Emergency Plan: Relapse Management

Reminder sheet

A slip is a major crisis in recovery. Returning to abstinence will require an all-

out effort.

Here are some things that can be done.

If I experience a lapse:

I will get rid of the alcohol and get away from setting where I lapsed.

I will realize that 1 drink or even one day of drinking use does not have to results in full-blown lapse. I will not give in to feelings of guilt or blame because I know these feeling will pass in time.

I will call for help from someone else.

At my next session, I will examine this lapse with therapist, discuss the events prior to my lapse, and identify triggers and my action to them. I will explore with my therapist what I expected alcohol to change or provide. I will work with my therapist to setup a plan so that I will be able to cope with a similar situation in the future.

REMEMBER: THIS LAPSE IS ONLY A TEMPORARY DETOUR ON THE ROAD TO ABSTINENCE

Appendix N: Practical Application of Motivational Interviewing

The procedure of MI will be achieved through 4 sessions of therapy. Therefore, the researcher will incorporate in each session, the five TTM stages of change (Pre-contemplation, contemplation, action and management) with the five principles of MI (expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance and supporting efficiency). Using MI techniques researcher will tailor MI strategies to client stage of change according to Prochaska and Di Clemente model. The following is practical application of MI as will be used in this study:

Stages of Change

Client stage	Practitioner task
Pre contemplation (not ready)	Raise doubt and increase client perception of the risks and problems with the current drinking behaviour Provide harm reduction strategies
Contemplation (getting ready)	Weigh the pros and cons of change with the client and work on helping them to tip the balance by exploring the ambivalence and alternatives, identifying reason for change/risks of not changing and increasing client confidence in their ability to change.
Preparation-action (ready)	Clear goal setting Helping client to develop a realist plan for making change and to take steps towards change
Maintenance (sticking to it)	Help clients to identify and use strategies to prevent relapse
Relapse (learning)	Help clients to renew the process of contemplation and action without being stuck or demoralized.

Relapse is normalized in MI and is used as an opportunity to learn about how to maintain long-term behaviour change in future. The practical application of MI occurs in two phases and these are building motivation to change and strengthening

commitments to change.

Building motivation to change

The four methods, which are normally used, are represented by the acronym, "OARS". This constitutes the basic counselling skills, which assist in building rapport, and establishing a therapeutic relationship that is consistent with the spirit of MI.

OARS – The Basic Skills of MI

Open-ended questions The client should be allowed to do most of the talking as the therapist learns more about what client cares about e.g. his/her goals and values.	Examples I understand you have some concerns about your drinking. Can you tell me about them?
Affirmations They include complements, appreciations, building rapport, validating and supporting client. It also helps to check out on strengths and efforts for change.	-I appreciate that it took a lot of courage for you to discuss your drinking behaviour. -You appear to have a lot of resourcefulness to have coped with these difficulties -Thank you for hanging in there.
Reflections -Include paraphrasing statements to capture implicit meanings and feelings. -They help to encourage continued personal exploration and to understand motivations. It is used to amplify or reinforce desire for change.	-You enjoy the effects of alcohol in terms of how it helps you unwind after stressful moments and also in interacting with friends without being too self-conscious. -But you are beginning to worry about the impact alcohol has on your academic work. -In fact recently you were worried when your grades fell too far below the expected level even your lectures have pointed that out. You are beginning to wonder if alcohol is really helping you at all.
Summarizing This links discussions and ensures mutual understanding of discussions. It helps to point out discrepancies between the client's current situation and future goals. It also demonstrates listening and	If it okay with you just let me check whether I understand everything we have discussed so far. You have been worrying about your drinking recently because you recognize that you have dropped in your academic work and you have feedback on the same from your lecturers.

understanding the clients.	The few times you have tried to stop drinking it has not been easy. How is that?

Strengthening commitments to change

This involves goal setting and negotiating a change plan action. The therapist needs to employ strategies to elicit change talk which is done by asking a series of targeted questions from the four categories as follows:

Eliciting change talk

Category	Change talk	Question to elicit change talk	Examples of clients change talk
1	Disadvantages of the status quo	What difficulties have resulted from your drinking In what ways does your behaviour concern you What worries you about your academic performance	I guess I am honest if I keep drinking, I am worried my family are not going to forgive me for my behaviour
2	Advantages of change	How would you like your achievements to be in 6 months' time? What are the advantages of your drinking? What would be different in your in your life if your performance improves	If I improve my academic performance, I would not have to feel guilty when I face my parents
3	Optimism for change	When did you make a significant change in your life before? How did you do it? What strength do you have that would change?	I did stop drinking a few months ago and felt so much healthier. It was really hard but once I put my mind to something, I stick to it
4	Intention to change	In what ways do you want your life to be different in five years? Forget how you would get there for a moment. If you could	I never thought I would be leaving like this. I want to go back to being strong, intelligent and enjoy my family and friends again

		do anything, what would you change?	

Table 2.3: Eliciting change talk
Source: Researcher, 2016

Appendix O: Ethical Clearance

DAYSTAR UNIVERSITY
Excellence • Transformation • Servant Leadership

Athi River Campus
P. O. Box 17 - 90145
Daystar University, Kenya
Tel: 045 6622601 (2) (3)
Fax: 045 6622420
E-mail: admissions@daystar.ac.ke

Nairobi Campus
P. O. Box 44400 - 00100,
Nairobi, Kenya
Tel: 020 2723 002 (3) (4)
Fax: 020 2728338
E-mail: admissions@daystar.ac.ke

www.daystar.ac.ke

Daystar University Ethics Review Board

Our Ref. DU-ERB/06/09/ 2018 /00158

Date: 06-09-2018

Rahab W. Gathuci

Dear Rahab,

EFFICACY OF MOTIVATIONAL INTERVIEWING THERAPY ON REDUCTION OF ALCOHOL USE DISORDER AMONG STUDENTS IN A KENYAN PRIVATE UNIVERSITY

Reference is made to your request dated 14-08-2018 for ethical approval of your proposal by Daystar University Ethics Review Board.

We are pleased to inform you that ethical review has been done and approval granted. In line with the research projects policy, you will be required to submit a copy of the final research findings to the Board for records.

This approval is valid for a year from 06-09-2018

This approval does not exempt you from obtaining a research permit from the National Commission for Science, Technology and Innovation (NACOSTI).

Yours sincerely,

Mrs. Purity Kiambi,
Secretary, Daystar University Ethics Review Board

"...until the day dawn and the ***daystar*** *arise in your hearts"*
2 Peter 1.19 KJV

Appendix P: Letter of Introduction from Daystar University

DAYSTAR UNIVERSITY
Excellence · Transformation · Servant-Leadership
Valley Road Campus
P.O. Box 44400 - 00100,
Nairobi, Kenya
Athi River Campus
P.O. Box 17, Daystar University,
90145, Athi River, Kenya
Tel: 0716 170 313/ 0716170198/
0724256408/9 OR
0709 972 000 (30 lines)
E-mail: admissions@daystar.ac.ke
Facebook: daystar-university-official
Twitter: daystaruni
www.daystar.ac.ke

7th September 2018

National Commission For Science, Technology and Innovation
8th - 9th Floor, Utalii House
off Uhuru Highway, Nairobi
P. O. Box 30623, 00100
Nairobi
KENYA

Dear Sir/Madam,

RE: RAHAB GATHUCI (14-0229)

The above named is a student in the PhD in Clinical Psychology program at Daystar University, Nairobi Campus.

She has completed her coursework for the doctoral program, defended her PhD proposal and done corrections as recommended by examiners and is now ready to go to the field to collect data.

Her topic of study is *'Efficacy of Motivational Interviewing Therapy on Reduction of Alcohol Use Disorder Among Students in a Kenyan Private University'.*

She is hereby authorized by the University to carry out her study by collecting data from the field. She requires your authorization such that she can be able to access and identify her target population.

Thank you in advance for your willingness to give this opportunity. We are truly grateful for your partnership in this, and for your orgarization's contribution in the education of Daystar University students.

If you have any queries, please do not hesitate to contact me.

Yours faithfully,

DR. KENNEDY ONGARO
DEAN, SCHOOL OF HUMAN AND SOCIAL SCIENCES &
COORDINATOR, PhD IN CLINICAL PSYCHOLOGY PROGRAM

"...until the day dawn and the daystar arise in your hearts"
2 Peter 1:19 KJV

Appendix Q: Research Permit

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471, 2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/18/90603/25395** Date: **11th September, 2018**

Rahab Wangari Gathuci
Daystar University
P.O Box 44400-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Efficacy of motivational interviewing therapy on reduction of alcohol use disorder among students in a Kenyan Private University"*** I am pleased to inform you that you have been authorized to undertake research in **all Counties** for the period ending **11th September, 2019.**

You are advised to report to **the Vice Chancellors of selected Universities, the County Commissioners and the County Directors of Education, all Counties** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Vice Chancellors
Selected Universities.

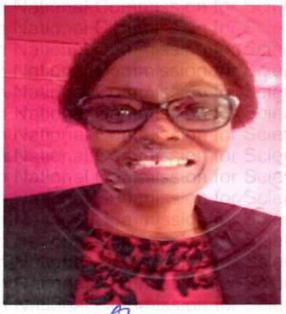
The County Commissioners
All Counties.

THIS IS TO CERTIFY THAT:
MS. RAHAB WANGARI GATHUCI
of DAYSTAR UNIVERSITY, 0-60100 Embu,has been permitted to conduct research in *All Counties*

on the topic: *EFFICACY OF MOTIVATIONAL INTERVIEWING THERAPY ON REDUCTION OF ALCOHOL USE DISORDER AMONG STUDENTS IN A KENYAN PRIVATE UNIVERSITY.*

for the period ending:
11th September,2019

Permit No : NACOSTI/P/18/90603/25395
Date Of Issue : 11th September,2018
Fee Recieved :Ksh 2000



.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

Appendix R: Research Approval by Mount Kenya University

Mount Kenya University

OFFICE OF THE VICE-CHANCELLOR

OUR REF: MKU/GEN/11-18/348

28th September, 2018

Rahab W. Gathuci
Daystar University
P O Box 44400 - 00100
NAIROBI

Dear Rahab,

RE: REQUEST TO COLLECT DATA AT MOUNT KENYA UNIVERSITY

I acknowledge with thanks receipt of your email dated 19th September, 2018 on the above subject.

Following consultation, I am pleased to grant you permission to collect data for your doctoral research entitled *"Efficacy of Motivational Interviewing Therapy on Reduction of Alcohol Use Disorder among Students in a Kenyan Private University"*.

By a copy of this letter, the Director, Research and Innovation is kindly requested to accord you the necessary assistance.

Yours faithfully

Mount Kenya University VICE CHANCELLOR P.O. Box 342 - 01000, Thika(K)

Prof. Stanley W. Waudo, Ph.D
VICE-CHANCELLOR

Copy: Deputy Vice-Chancellor, Academic and Research Affairs
Director, Research and Innovation

....SWW/mcm

Main Campus, General Kago Road, P.O. Box 342-01000 Thika. Tel: +254 67 2820 000,
Cell: +254 720 790 796, 0709 153 000
Email:info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2008 Certified Institution.
Unlocking Infinite Possibilities

Appendix S: Researcher's CV

NAME: RAHAB WANGARI GATHUCI

Email: rgathuci@gmail.com

EDUCATION LEVEL

PhD in Clinical Psychology Candidate:	Daystar University
MA Counselling Psychology:	Daystar University
BEd & Counselling	Kenya Methodist University

WORK EXPERIENCE:

Currently working at Mount Kenya University (MKU) Nairobi Campus Department of Psychology as the Department Coordinator.

Appendix T: Plagiarism Report

Rahab Gathuci dissertation - 14.10.2020

ORIGINALITY REPORT

20%	16%	6%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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Rahab Gathuci dissertation - 14.10.2020

by Rahab Gathuci

Submission date: 14-Oct-2020 01:22AM (UTC+0300)
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