FACTORS ASSOCIATED WITH ALCOHOL USE DISORDER AMONG DRIVERS OF PUBLIC SERVICE VEHICLES IN MOSHI KILIMANJARO REGION TANZANIA

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DECLARATION AND APPROVAL

Declared by the student

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DEDICATION

This Thesis is dedicated to my parents and siblings for their financial support without forgetting my daughter Joan.

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ABSTRACT

Public service vehicles are essential components of transportation networks, Alcohol Use Disorder among drivers is an important problem as it poses serious dangers to public safety. Alcohol Use Disorder (AUD) affects more than 283 million individuals and 3 million people died in 2018 due to alcohol use disorder leaving behind 132 million people with Disability Adjusted Life Years (DALY), whereby males are more affected than women about three-quarters globally. This study aimed to determine the prevalence and factors associated with alcohol use disorder among drivers of Public Service vehicles in Moshi Kilimanjaro. This was a mixed-methods study with analytical cross-sectional research using stratified proportional random sampling to choose 292 respondents**,** Stata version 15 was used for data analysis. Frequency and proportions were used to describe categorical data, while measures of central tendency and the corresponding measures of dispersion were used to summarize continuous variables and the Log-binomial model for factors associated with Alcohol Use Disorder among drivers of public vehicles. A multivariable log-binomial model was used for the control of confounders and to test the effect modifier**.** The significance level for each analysis was set at 5%, and all tests two-tailed. Qualitative data was gathered through key-informant interviews, and the drivers' individual experiences and viewpoints about alcohol usage were recorded using an audio-recorder. Qualitative results were analyzed using thematic analysis through an iterative process using NVivo software. This study was able to recruit 295 participants, all were men, and 83.0% of the respondents admitted to drinking alcohol. This study revealed a 63% prevalence of alcohol use disorder drivers. Social determinant factors like Stress due to work or family related (PR=1.56; 95%CI,1.05 to 2.32; P<0.027), Source of alcohol beverage (PR=3.84 (95%CI,1.37to10.72; P<.01), Low price (PR= 2.06; 95%CI,1.09 to 3.88; P<.025), and Siblings use (PR=1.66; 95%CI, 0.097 to 2.85; P<.062) showed strong association with alcohol use disorder among the driver. However qualitative data demonstrated Stress, cheap alcohol, cultural norms, parent usage, use of other drugs and readily available, as risk factors for alcohol use disorder. In conclusion, this study highlights the importance of addressing the various factors such as low price, stress (work or family-related), sibling's use, sources of alcoholic beverages, and exhibited increased risks of hazardous alcohol use in both the crude and adjusted models ($p < 0.05$). By enabling the implementation of strict alcohol laws that prohibit drinking during work hours, raising taxes, and carrying out regular alcohol testing, as well as treatment programs, extensive education and awareness campaigns that highlight the dangers and effects of alcohol use disorder to establish preventative and safety measures to promote health and well-being of drivers.

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LIST OF ABBREVIATIONS AND ACRONYMS

AUD	Alcohol Use Disorder
AUDIT	Alcohol Use Disorder Identification Test
DALY	Disability Adjusted Life Years
HIC	High Income Countries
KII	Key Informant Interviewer
LATRA	Land Transport Regulatory Authority
LMIC	Low- and Middle-Income Countries
MITU	Mwanza Intervention Trial Unit
MKU	Mount Kenya University
MoH	Ministry of Health
PSV	Public Service Vehicle
PSVD	Public Service Vehicle Driver
TBI	Traumatic Brain Injury
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

All around the world, approximately 2.3 billion individuals use alcohol, and more than 283 million people suffer from Alcohol Use Disorder (AUD) (Hammer, Parent, Spiker, & WHO, 2018). In 2018 three million people died due to alcohol use which includes 2.3 million men, 0.7 million women, and 132 million Disability Adjusted Life Years (DALY) (106 million men, 26 million women), with almost three-quarters of the burden falling on men. However, this represents 5.3% of all deaths and 5% of DALYs (Hammer *et al*., 2018) Whereas the frequency of AUD is roughly 4.1% worldwide, 3.3% in Africa, 2.2% in Southeast Asia, and 0.3% in Middle East (Hammer *et al*., 2018). A 2016 systematic evaluation of the global burden of diseases, showed that no quantity of alcohol intake is safe (Griswold *et al*., 2018). Therefore Drinking alcohol and engaging in AUD were linked to health problems, road traffic accidents, and other injuries as well as unemployment and lower work productivity (Staton *et al*., 2020; Reardon *et al*., 2017). Furthermore in High-Income Countries (HIC) like the United States of America, drunk driving caused 11,654 fatalities in 2020, an increase of 14% from 2019, 6% of all deaths, and more than 14 million adults are attributable to AUD (NHTSA, 2009).

A study done in Australia revealed that last year's drinking by outsiders harmed 50% of the population (Hammer *et al*., 2018). Another study conducted in Australia found that 17% of persons with alcohol use disorders also suffered from mental illness, and 16% of individuals with mental illnesses also had an alcohol use problem (Burns & Teesson, 2002). Another study revealed that alcohol intake was responsible for almost 25% of the burden of disease related to suicide and self-inflicted injuries (Mathers, *et al*., 2001). There was an association between drinking alcohol and oral cavity cancer, pharynx cancer, esophagus cancer and liver cancer (Nepal *et al*., 2022). Even though global per capita alcohol intake increased from 5.5L in 2010

to 6.4L in 2015, making alcohol consumption the seventh-ranking risk factor for mortality and morbidity. This amount of alcohol intake was predicted to increase to 7.6L by 2030, particularly in Low and Middle-Income Countries (Burton & Sheron, 2018; Nepal *et al*., 2022; Callinan & Livingston, 2019). Therefore, no amount of alcohol was safe because it can impair driving abilities and bring poor vision, judgment, coordination, and attention (Burton & Sheron, 2018). However, different studies showed that driving while intoxicated increases the chance of accidents and fatalities by more than 3% (Busayo & Oyelana, 2018). Even though driving under the influence of alcohol was the leading cause of traffic accidents (Hammer *et al*., 2018). Many drivers frequently speed and violate traffic signs (Nepal *et al*., 2022). Research conducted at the Kilimanjaro Christian Medical Center's Emergency Department revealed that 30% of wounded patients drank alcohol at the time of their injuries and 17% of injured patients reported drinking three or more drinks (Reardon *et al*., 2017; Staton *et al*., 2018; Zhao *et al*., 2020). This data showed that there was a link between accidents and alcohol consumption. However, alcohol was a risk factor for many illnesses and was the biggest risk factor for traumatic brain injury which can result in mortality and disability (Weil *et al*., 2018; Griswold *et al*., 2018). Alcohol accounts for 6% of all mortality and 9.6% of disability-adjusted life years (DALYs) globally, (28% of injuries, 21% of digestive disorders, 19% of cardiovascular diseases, and 32% include mental disorders, cancer, and infectious diseases (Hammer *et al*., 2018; National Institute on Alcohol Abuse and Alcoholism, 2020).

Other effects of alcohol use disorder include divorce, unemployment, crime, drop from school or working workplace, impaired productivity, and the financial burden on families and workers (Vissoci *et al*., 2018; National Institute on Alcohol Abuse and Alcoholism, 2020). In Nepal, drinking alcohol was both culturally and socially accepted among many cultural groups, and it has been on the rise over time among all cultural groups and of different ages (Nepal *et al*., 2022). According to a World Health Organization (WHO) step study conducted in Nepal, 17%

of the population (28 men and 7.1% of women) had ingested alcohol within the previous 30 days 18.6% of men and 2.9% of women had binge drunken (Aryal *et al*., 2015). If a person is caught and there is enough proof, this person can be accused of drunk driving and punished (Busayo & Oyelana, 2018).

In Sub-Saharan Africa alcohol use causes 6.4% of all mortality and 4.7% of DALYs compared to High-Income Countries(HIC) which were found to be 3.3% and 2.4% respectively by World Health Organization year 2012 (Ferreira-Borges, Parry, & Babor, 2017). The AUD prevalence in Africa was around 3.3% (Hammer *et al*., 2018). In 2016, Tanzania had a 6.6% AUD prevalence rate, which was approximately twice as high as the 3.3% rate for all of Africa. Even alcohol consumption per capita annually was 3L higher than 9.4L for persons older than 15 years compared to that of the Arica region 6.3L (Hammer *et al*., 2018).

A report from the traffic police department showed that 859 people are killed by road accidents and 1525 injuries every year with an economic burden ranging from USD 1.2 to 1.5 million (Humphreys, Wood, Phillips, & Macey, 2013**;** LATRA, 2020)**.** Road traffic accidents account for 70% of all injuries caused by alcohol in Tanzania (Staton *et al*., 2018). Thus ranks eighth in the world and accounts for 6.1% of all deaths in Tanzania (Hammer *et al*., 2018). A cross-sectional study conducted in Dar es Salaam among tax rider divers found that the prevalence of AUD was around 61.5% (Daniel W Kitua, *et al*., 2010).

In Moshi, however, alcohol consumption per person has been growing quickly, with the Kilimanjaro region having the highest reported rates in Tanzania (Francis *et al*., 2015). Despite Tanzania's national alcohol policy adopted from WHO programs on the reduction of harmful alcohol use to have a healthy community, many efforts have been made, such as those of the Mwanza Intervention Trial Unit (MITU), to reduce availability, increase taxes, burn marketing of alcohol, and limit opening hours despite the number of interventions in place. Alcohol use and AUD were still present (nearly every shop selling alcohol, marketing alcohol using leaflets

t-shirts, tables, chairs, advert boards along the roads, alcohol promotion, and increased production of different varieties of alcohol with a poor package) actually This was not reducing but rather encouraging people to drink and contribute to several adverse outcomes and progress of adverse alcohol use and AUD outcome was high in Low and Middle Income Countries include Tanzania. Even though Alcohol use and AUD reoccur among drivers of Public Service Vehicle (PSV) little was known on factors associated with AUD among drivers of PSVs in Tanzania to enable evidence-based interventions.

1.2 Statement of the problem

Public service vehicles are essential components of transportation networks, for the safe and effective movement of people, although the prevalence of Alcohol Use Disorder among drivers was an important problem as it possessed serious dangers to public safety. More than 283 million individuals worldwide suffer from alcohol use disorder (AUD), and 3 million people have died as a result of alcohol consumption. Of these 132 million Disability Adjusted Life Years (DALY), about 75% of men suffer from AUD than women. This represents 5.3% of all deaths and 5% of DALYs (Hammer *et al*., 2018).

In Sub-Saharan Africa alcohol use causes 6.4% of all mortality and 4.7% of DALYs compared to High Income Countries which was found to be 3.3% and 2.4% respectively by World Health Organization year 2012 (Ferreira-Borges *et al*., 2017)**.** However, in Tanzania, road traffic accident accounts for 70% of all alcohol-related injuries (Staton *et al*., 2018)**.** The Prevalence of AUD was around 6.8% in the year 2016 which was around two times higher compared to that of the African region at 3.7%. Even though, alcohol consumption per capita annually increased by 3L higher to 9.4L for persons older than 15 years compared to that of the Africa region 6.3L (Hammer *et al*., 2018). Alcohol abuse was a bigger issue in Moshi Kilimanjaro than it was in other regions of Tanzania (Zhao *et al*., 2020; Zhao *et al*., 2020; Gebre, 2019).

Despite the number of interventions in place through Tanzania's National alcohol policy of 2017 like the Mwanza Intervention Trial which aimed to reduce availability, burn marketing, limit opening time for bars and increase taxes (Mwanza Intervention Trials, 2017)**. S**till, Alcohol Use Disorder was present and contributed to several adverse outcomes and progress of adverse alcohol use and Alcohol Use Disorder outcome was high in Low and Middle-Income Countries including Tanzania. Even though Alcohol use and AUD reoccur among drivers of public service vehicles (PSV) little was known about factors associated with AUD among drivers of public service vehicles (PSV) in Tanzania to enable evidence-based interventions. Thus, the purpose of this study was to ascertain the incidence of alcohol use disorder and the social determinants linked to it among PSV drivers at the Moshi bus terminal in the Kilimanjaro region. In order to fulfill Sustainable Development Goal 3, which was to guarantee health and well-being for all by 2030, a decrease in the prevalence of alcohol use disorders was required.

1.3 Justification of the study

According to data from the World Health Organization in 2012, alcohol use causes more than 6% of deaths and 4.6% of Disability Adjusted Life Years (DALY) in Sub-Saharan Africa, while it only causes 3.3% and 2.4% of these outcomes in High-Income Countries (HIC). (Ferreira-Borges *et al*., 2017)**.** In Tanzania, the prevalence of Alcohol Use Disorder (AUD) was about 6.8% in 2016, which was twice as high as the 3.7% for all of Africa. Even though the quantity of alcohol consumed per person over the age of 15 rose by 3L compared to 6.3L per person in the African region (Hammer *et al*., 2018). The study showed that road traffic accident accounts for 70% of all alcohol-related injuries (Staton *et al*., 2018).

Consequently, it accounts for 6.12% of all deaths in Tanzania, placing it ninth in the world (Hammer *et al*., 2018). Another study found that one of the main factors contributing to Tanzania's high rate of road traffic injuries (RTI) was drunk driving (Åstrøm, Moshiro, Hemed, Heuch, & Kvåle, 2006). Excessive alcohol drinking was a greater problem in Moshi

Kilimanjaro than it was in other parts of Tanzania (Zhao *et al*., 2020; Zhao *et al*., 2020; Gebre, 2019). Since a large number of road users are drivers of public vehicles, a better knowledge of the prevalence and social determinants of alcohol use disorder among them can help make the roads safer and, in turn, improve people's quality of life. Even though Tanzania implemented a national alcohol policy in 2017 that intends to limit availability, restrict bar operating hours, restrict marketing, and raise taxation (Mwanza Intervention Trials, 2017).

However, we continued to witness an adverse number of AUD outcomes and Tanzania was one of many low-income countries that have high rates of harmful alcohol use and alcohol use disorder (AUD) outcomes. Although drivers of public service vehicles (PSV) frequently use alcohol and have alcohol use disorders, little was known about the causes of these disorders in PSV drivers. However, the results of this study will educate, inform, and eventually safeguard drivers of public service vehicles by properly mitigating the identified determinant, we may increase people's understanding of risk factors, health, and their protection in their community while also promoting and improving risk management systems in workplaces.

Strict enforcement of and adherence to the alcohol policy, as well as the rules set out by the Traffic and Land Transport Regulatory Authority. Also, these findings could be used by doctors or clinicians for the accurate diagnosis and treatment of disorders and interventions**.** Also, the government will gain from this study by having its financial burden from costs associated with workplace accidents, diseases, and injuries minimized. Additionally, it will increase awareness of the value of instruction in and implementation of driving safety standards among business owners and workers in the informal sector. Consequently, to develop rehabilitation facilities, suitable regulations, and laws, as well as to mitigate procedures for enhancing them, it also promotes the need for road traffic police to enforce safety regulations and inform the government and other stakeholders about factors associated with AUD among PSV drivers.

This study determined factors associated with alcohol use and alcohol disorder among drivers of public service vehicles at the Moshi bus terminal in the Kilimanjaro region. This study's findings generated information that other researchers, healthcare providers, and policymakers can utilize to develop a variety of intervention initiatives to achieve Sustainable Development Goal 3 (Collin & Casswell, 2016). Ensuring everyone's health and fighting alcohol misuse through treatment and prevention by 2030 (Jenkins *et al*., 2015). Hence minimizing the consequences of accidents and promoting safer roads indirectly improves each person's quality of life.

1.4. Objectives

1.4.1 Broad objective

To examine factors associated with alcohol use disorder among drivers of public service vehicles in Kilimanjaro Region Tanzania.

1.4.2 Specific objective

1. To assess the prevalence of alcohol use disorder among drivers of public service vehicles at Moshi bus terminal in Kilimanjaro region Tanzania.
2. To determine Socio-demographic factors associated with alcohol use disorder among drivers of public services vehicles at the Moshi bus terminal in the Kilimanjaro region Tanzania
3. To evaluate social factors associated with alcohol use disorder among drivers of public services vehicles at Moshi bus terminal in Kilimanjaro region Tanzania

1.5 Research questions

1. What is the prevalence of alcohol use disorder among drivers of public service vehicles at Moshi bus terminal in Kilimanjaro region Tanzania
2. What are Socio-demographic factors associated with alcohol use disorder among drivers of public services vehicles at Moshi bus terminal in Kilimanjaro region Tanzania

3. What are social factors associated with alcohol use disorder among drivers of public services vehicles at Moshi bus terminal in Kilimanjaro region Tanzania

1.6 Scope of the study

This study focused on factors associated with alcohol use disorder among drivers of public service vehicles at the Moshi bus terminal in the Kilimanjaro region. Information from 295 respondents was gathered over 14 days using a mixed method, analytical cross-sectional study design with 22 respondents being sampled daily. Drivers were helped to adopt health-related behaviors using the Health Belief Model.

1.7 Study limitations

1.7.1 Limitations

Reporting bias, drivers of public vehicles were hesitant to disclose alcohol use disorders for fear of losing their jobs or facing legal repercussions, but this was avoided with adequate informed consent and proper questionnaires.

1.7.2 Study Delimitation

This study was delimited to the driver of the public services vehicles at the Moshi bus terminal in Kilimanjaro region

1.8 Assumption of the Study

Study participants who satisfied the inclusion requirements and gave truthful answers to the questions were included in the study's assumptions.

Without requiring any sort of incentive, participants were willing to take part.

1.9 Operation definition of key terms

Alcohol use disorder (AUD): is a medical disorder characterized by a reduced ability to reduce or manage alcohol consumption despite dangers to one's health, social standing, or job.

Alcohol Use Disorder Identification Test (AUDIT) This is the tool used to assess the use of alcohol consumption, and the behaviour of drinking, and consists of 10 items.

Driver: is any individual with a valid driving license who drives or otherwise has physical control of a vehicle.

Prevalence: is a measurement of the quantity of disease cases within a population at a specific moment or over a specific amount of time.

F**actor** is a fact or situation that influences an outcome

Health and Safety regulations are actions planned to prevent accidents or injury in the workplace or the public environment.

Health and Safety Trainings are policies and procedures designed to stop accidents or injuries in the workplace or public spaces.

CHAPTER TWO

LITERATURE REVIEW

2.1 Empirical literature

Over 3 million deaths and 132 million Disability Adjusted Life Years were caused by alcohol use disorder (DALY), with men suffering a greater burden than women roughly three-quarters higher. This accounts for 5% of DALYs and 5.3% of all deaths (Hammer *et al*., 2018). Nevertheless, research conducted in the United States of America (USA) indicated that drunk driving caused 11,654 fatalities in 2020, an increase of 14% from 2019 (NHTSA, 2009).

In Sub-Saharan Africa alcohol use causes 6.4% of all mortality and 4.7% of DALY compared High Income Countries(HIC) which were found to be 3.3% and 2.4% respectively by World Health Organization(WHO) year 2012 (Ferreira-Borges *et al*., 2017)**.** Although alcohol use ranks seventh among risk factors for mortality and morbidity, globally, per capita alcohol consumption climbed from 5.5 liters in 2000 to 6.4 liters in 2016. Despite the fact that by 2030, this volume is expected to rise to 7.6 L (Burton & Sheron, 2018; Nepal *et al*., 2022; Callinan & Livingston, 2019). However, according to studies, the prevalence of alcohol use disorder in Tanzania was around 6.8% in 2016, which is almost twice as high as the 3.6% for the continent of Africa. Another investigation on tax riders in Dar es Salaam, Tanzania, found 60% (Hammer *et al*., 2018). The quantity of alcohol consumed per person over the age of 15 increased by 3L in comparison to 6.3L per person in the African region yearly (Hammer *et al*., 2018). Driver alcohol intake is therefore considered to be one of the major causes of road traffic injuries (RTI) in Tanzania. However, RTIs account for 70% of all alcohol-related injuries (Staton *et al*., 2018). Accounts for 6.12% of all deaths in Tanzania, placing it ninth in the world (Hammer *et al*., 2018). Another study found that one of the main factors contributing to Tanzania's high rate of road traffic injuries (RTI) was drunk driving (Åstrøm *et al*., 2006).

Father more any amount of alcohol can make it difficult to drive safely, which can lead to poor coordination, eyesight, judgment, and focus (Burton & Sheron, 2018). Still, excessive alcohol drinking was a greater problem in Moshi Kilimanjaro than in other parts of Tanzania (Zhao *et al*., 2020; Gebre, 2019). However, a study done at the emergency department of the Kilimanjaro Christian Medical Center found that 30% of injured patients had consumed alcohol at the time of their injuries, and 17% of injured patients admitted to having three or more drinks (Reardon *et al*., 2017; Staton *et al*., 2018; Zhao *et al*., 2020).

Despite several interventions in place, Alcohol use and Alcohol Use Disorder (AUD) were still present and contributed to several adverse outcomes. The progress of adverse alcohol use and AUD outcome was poor in Low and Middle Income Countries including Tanzania. Thus Alcohol use and AUD reoccur among drivers of Public Service Vehicles but little was known on factors associated with Alcohol Use Disorder among drivers of Public service vehicles in Tanzania to enable evidence-based interventions.

2.2 Literature search strategy

The literature cited in this thesis was obtained by using Google Scholar and PubMed, as search engines. The term used includes Alcohol use disorder, Alcohol consumption, Alcoholism, Driver, Accident, Injuries, Traumatic brain injury, prevalence, non-communicable diseases, Morbidity, Burden, Impact, Drag abuse, communicable diseases, factors associated, Alcohol, Disorder, Risk factors, mortality. The study cited only papers written in the English language.

2.3 Alcohol Use Disorder

Alcohol Use Disorder (AUD) affects more than 283 million people worldwide, with men making up three-quarters of those suffering (Hammer *et al*., 2018). Even though the prevalence of AUD is 4.1% worldwide, 3.3% in Africa, 2.2% in South East Asia, and 0.3% in the Middle East (Hammer *et al*., 2018). While in the United States of America, more than 14 million adults are affected by AUD (NHTSA, 2009). An Australian study found that 17% of people with

alcohol use disorders also had mental illnesses, and 16% of people with mental illnesses also suffered from alcohol use (Burns & Teesson, 2002).

However, injuries account for 28% of cases, digestive issues account for 21% of cases, heart issues account for 19% of cases, and mental health issues, cancer, and infectious diseases account for 32% of cases. Previous research has demonstrated that alcohol use disorder raises the risk of a number of diseases, which are responsible for 9.6% of Disability-Adjusted Life Years and 6% of all deaths globally (Hammer *et al*., 2018). However, a cross-sectional study conducted in the Philippines in 2020 among male sexual minorities indicated that alcohol use disorder was linked to depression and anxiety (CarvalhoPonce, 2019). Even though a cross-sectional study of university students in Ethiopia in 2020 found a substantial link between alcohol use disorder, drug use, and mental health (CarvalhoPonce, 2019). AUD was the risk factor for accidents, different studies done at the Emergency Medical Department in Kilimanjaro Christian Medical Centre showed that 30% of injured, patients drank alcohol at the time of their injuries, with 17% of them reporting having three or more drinks (Reardon *et al*., 2017; Staton *et al*., 2018; Zhao *et al*., 2020).

Tanzania had a 6.6% incidence compared to the rest of Africa, where the prevalence of AUD was 3.3% in 2016. However, it was shown that the prevalence of AUD was around 5.6% in cross-sectional research among tax rider divers in Dar es Salaam (Daniel W Kitua *et al*., 2010)**.** Studies showed males have about two times higher alcohol use disorder compared to females which is 16.3% (Alemu, Sobotka, Tesfaye, Ahmed, & Tesfaye, 2020)**.**

2.4. Socio-demographic factors

2.4.1 Age

Younger drivers may be more prone to alcohol use disorders because of things like peer pressure, experimentation, and a greater likelihood of hazardous behaviour. On the other hand, if elderly drivers have been drinking for a longer time or have grown dependent on it, they may

be in higher danger. Alcohol use disorder affected 5.8% of American adults, including 7.6% of men and 4.1% of women overall, according to results from a nationwide study on drug use and health in the United States of America (Substance Abuse and Mental Health Services Administration (SAMHSA), 2019). Age, gender, and sex have all been linked to alcohol use disorder, with males accounting for 8.7% of cases and women for 8% in a cross-sectional research done in Morocco (Ben-El Jalali, Benazzouz, El Hessni, Ouichou, & Mesfioui, 2020). In other research, the prevalence of alcohol intake was shown to range from 3.9% among 12 to 13-year-old teenagers to 51.6% among those between the ages of 18 to 20 years (Ben El Jilali *et al*., 2020). A recent study showed that alcohol use disorder is linked to age, parent alcohol usage, hostel upbringing, friend alcohol use, sibling alcohol use, and ready availability (Bello, Ndifon, Ikpeme, Fatiregun, & Oyo-Ita, 2011). According to research by Lopez and colleagues, a 10-year rise in age resulted in a 22% reduction in alcohol consumption, with a considerable reduction in consumption among people 60 years of age and beyond (CarvalhoPonce, 2019). Additionally, studies have indicated that drinking disorders are the most common in younger age groups(Kim *et al*., 2008).

2.4.2. Sex

According to research, men may be more likely than women to experience an alcohol use disorder. This could be the result of several things, including cultural influences, societal conventions, and variations in alcohol metabolism. Studies found that men are more affected than women (Gowing *et al*., 2015). Alcohol use is more prevalent in men (11.58%) than in women in Ethiopia, according to a systematic review and meta-analysis 1.21% (Eyer *et al*., 2017). Also, a survey done in South Africa found that 3.6% of men and women 1.4% had alcohol use disorder (Pengpid, *et al*, 2011).

A cross-sectional study in Morocco reported sex was associated with Alcohol Use Disorder, where men account for 8.7% and girls for 8% (Ben-El Jalali, Benazzouz, El Hessni, Ouichou,

& Mesfioui, 2020). Findings from Brazil showed that among the Alcohol Use Disorder population found that 18.4% of men were found to be three times higher compared to women and were associated with higher among, better schooled, being single, richer, and employed, (Reisdorfer, *et al*, 2012). Males were more likely than girls to have alcohol use disorders, according to a cross-sectional research of Tanzanian teenagers aged 15 to 24 (Francis *et al*., 2015).

2.4.3. Education

A higher likelihood of alcohol consumption disorder has been linked to lower socioeconomic status and educational levels. Higher stress levels, less access to resources, and fewer opportunities for effective coping techniques might all be factors in this association**.** However results from a survey study in Ghana revealed that higher socioeconomic position, education level, and being single were linked to alcohol use disorder (Adeyiga, Udofia, & Yawson, 2014)**.** Furthermore, recent research, alcohol use disorder is linked to factors like education, parent usage, friend use, sibling use, readily available drugs use of other substances culture (Bello *et al*., 2011).

Higher levels of education are linked to more money to spend, which boosts rates of alcohol intake (Daniel W Kitua *et al*., 2010)**.** Education level, employment situation, and family history of alcohol intake were all highly associated with excessive alcohol consumption. Also, hazardous alcohol use, any use of alcohol, and having a parent with either primary education or no formal education were strongly correlated (Singhammer & Mittelmark, 2006). According to Devaux and Sassi's 2015 study, more-educated women were less likely to engage in such behaviour than less-educated women, while less-educated males were more likely to consume alcohol than educated men (Devaux & Sassi, 2016).

2.4.4. Religion

The frequency of alcohol consumption disorder can be influenced by various cultural norms and attitudes about drinking. Alcohol drinking may be more acceptable or tolerated in some cultures, which might raise potential hazards. According to recent data, alcohol use disorder is linked to culture, greater economic levels and religion (Bello *et al*., 2011). According to survey research conducted in South Africa, Alcohol Use Disorder was linked to higher wealth, male gender, more sexual partners, and non-Muslim religion (Pengpid *et al*., 2011). A cross-sectional study of young people aged 15 to 24 in northern Tanzania indicated that alcohol use disorder is linked to the non-Muslim faith (Francis *et al*., 2015).

2.4.5. Marital status

Unmarried, divorced, or separated people may be more likely to develop an alcohol use disorder. Increased alcohol use may be influenced by problematic relationships, social isolation, and a lack of support networks. Other effects of alcohol use disorder include divorce, unemployment, crime, drop from school or workplace, impaired productivity, and the financial burden to the families and workers (Vissoci *et al*., 2018; National Institute on Alcohol Abuse and Alcoholism., 2018**).** Alcohol use was linked to being male, being in a relationship, practising a non-Muslim faith, and having more sexual partners (Francis *et al*., 2015). Separated, never married, and divorced were highly related to excessive alcohol use, according to a study conducted in Western Australia (Liang & Chikritzhs, 2012).

2.5. Social determinant factor

2.5.1 Family use

A previous descriptive cross-sectional study conducted in Nigeria found associations between alcohol use and friend, parent, and other drug use (Bello *et al*., 2011). A cross-sectional study conducted among Tanzanian tax-rider drivers in 2018 discovered a significant relationship between family history and alcohol use disorder (Daniel W Kitua *et al*., 2010)**.** Additional

research revealed that the drinking habits of fathers and mothers have various impacts on their children (White, Johnson, & Buyske, 2000). A child's immediate familial and social surroundings provide the groundwork for both unhealthy and beneficial behavioural development (Hung, Yen, & Wu, 2009). Families have a huge influence on children because they shape them from a young age in the environment of a lasting relationship (Sciior, 1996). Similar research carried out in the Netherlands among twins in their adolescence and early adulthood found a positive association between parents' drinking habits and family history of alcohol abuse and low socioeconomic status as factors that increase the risk of drinking abuse (Edenberg & Foroud, 2013) (Vink, 2016). Therefore, it seemed likely that drivers' close social connections had a significant impact on their behaviour. Similar results were presented by Hung and colleagues, who discovered that participants' alcohol use was significantly predicted by having both parents who were drinkers (Hung *et al*., 2009).2.5.2 Friend use

Friends' alcohol intake also showed a strong relationship with participants' drinking alcohol (Poelen, *et al*, 2007). In a prior descriptive cross-sectional study done in Nigeria, it was discovered that there were correlations between alcohol use disorder and friend use (Bello *et al*., 2011). The other reason is that students typically consume more alcohol at social occasions because they value social contact. Drinking habits, with some more socially involved students often engaging in excessive drinking (Lorant, Nicaise, Soto, & D'Hoore, 2013). However, a cross-sectional study conducted in Nigeria found that alcohol consumption problems were independently predicted by peer pressure to drink (Derese, Seme, & Misganaw, 2010); Lemma *et al*., 2021).

2.5.2 Readily available

According to a self-reported alcohol and health behaviour study carried out in Kilimanjaro, variables that affect alcohol use disorder include accessibility, cost, and age at which the first drink is consumed (Staton *et al*., 2020). Studies have shown that having easy access to alcoholic

beverages is one of the key factors influencing alcohol use and excessive drinking. Easy access to alcoholic beverages in the vehicle parks and the neighborhood around homes was revealed to be connected to alcohol use. This study found a high correlation between alcohol use, in any form, and a hostile upbringing (Chaloupka & Wechsler, 1996). Therefore, research has shown that having easy access to alcoholic drinks is one of the key factors influencing alcohol usage and excessive drinking.

2.5.3 Up bring environment

The frequency of alcohol consumption disorder can be influenced by various cultural norms and attitudes about drinking. Alcohol drinking may be more acceptable or tolerated in some cultures, which might raise potential hazards. According to recent research, alcohol use disorder is linked to factors such as culture, age, parent use, hostel upbringing, friend use, sibling use, ready available, use of other drugs, traumatic brain injury (TBI), religion, education, and higher income level (Bello *et al*., 2011). This study discovered a strong link between drinking alcohol of any kind and having a hostile upbringing (Chaloupka & Wechsler, 1996).

2.5.4 Stress

According to cross-sectional research done in the Philippines in 2020 among male sexual minorities, alcohol use disorder during the COVID-19 Pandemic is associated with sadness and anxiety (CarvalhoPonce, 2019). According to the current study, university students' likelihood of having Alcohol Use Disorder is doubled when they experience high levels of emotional stress (Reavley, *et al*, 2011); Sintayehu, *et al*, 2015). This may be the case since alcohol use is seen to be a coping strategy for stress, worry, and sadness; as such, it functions as a type of self-care (Beccaria, 2019).

2.5.5 History of drug use

Another study in Australia revealed that about 17% of people with alcohol use disorders also had mental diseases, and 16% of those with mental illnesses also had alcohol use problems (Burns & Teesson, 2002). A cross-sectional survey done in Ethiopia among university students in 2020 discovered a strong connection between alcohol use disorder, drug use, and mental health (CarvalhoPonce, 2019). The research found that students who chew khat regularly have roughly three times the likelihood of developing Alcohol Use Disorder as opposed to those who don't use (Tesfaye *et al*., 2019; Tulu & Keskis, 2015). While other studies revealed that, heavy drinkers were more likely to be smokers (Drobes, 2002 *et al*, 2007) (White *et al*., 2000) (Hung *et al*., 2009). In Nigeria, a cross-sectional investigation discovered links between alcohol use disorder as well as other drug use (Bello *et al*., 2011).

2.6. Theoretical framework

This study adopted the Health Believe Model (HBM), which states that, if the person does not perceive healthcare behaviour as risky or threatening then there is no stimulus to act (Becker, M.h ., 1974; Washburn, 2020). Therefore, HBM details that the driver adopted a health-related behaviour (addressing Alcohol use disorder) under the following considerations:

1. Perceived susceptibility a driver was susceptible to suffering from Alcohol Use Disorder
2. Perceived severity there was a risk for the driver to suffer from Alcohol Use and the consequences
3. Perceived benefits there was the benefit of taking preventive action to control alcohol use and other diseases
4. Perceived barriers to take action were managed
5. Cues to actions driver received a reminder through media and education
6. Self-efficacy during intervention driver received training on Alcohol Use Disorder

2.7 Conceptual framework

2.7.1 Study variable

The Alcohol Use Disorder Identification Test was used to analyze the dependent variable, which is Alcohol Use Disorder (Bohn *et al*., 1995; Reinert & Allen, 2002). This tool was used to assess the use of alcohol consumption, and the behaviour of drinking, and consists of 10 items. It was administered by a researcher, a score of 8 or above (>=8) indicates a high risk of AUD and less than 8 (<8) indicates a low risk of AUD. The tool has been validated in Tanzania and shows acceptable results(Bohn *et al*., 1995; Vissoci *et al*., 2018; Reinert & Allen, 2002). Independent variables for this study included demographic characteristics and social determinant factors associated with Alcohol Use Disorder among drivers of public service vehicles. Demographic characteristics were Sex, Marital status, Level of education, Age, Religion, Gender, Tribe, Residence, Income and Employment status. Social determinant factors include Parent use, Friend use, readily available, History of other drug use, Siblings, Low price, Upbringing environment, Type of alcoholic beverages, Source of alcoholic beverages, Culture and Curiosity.

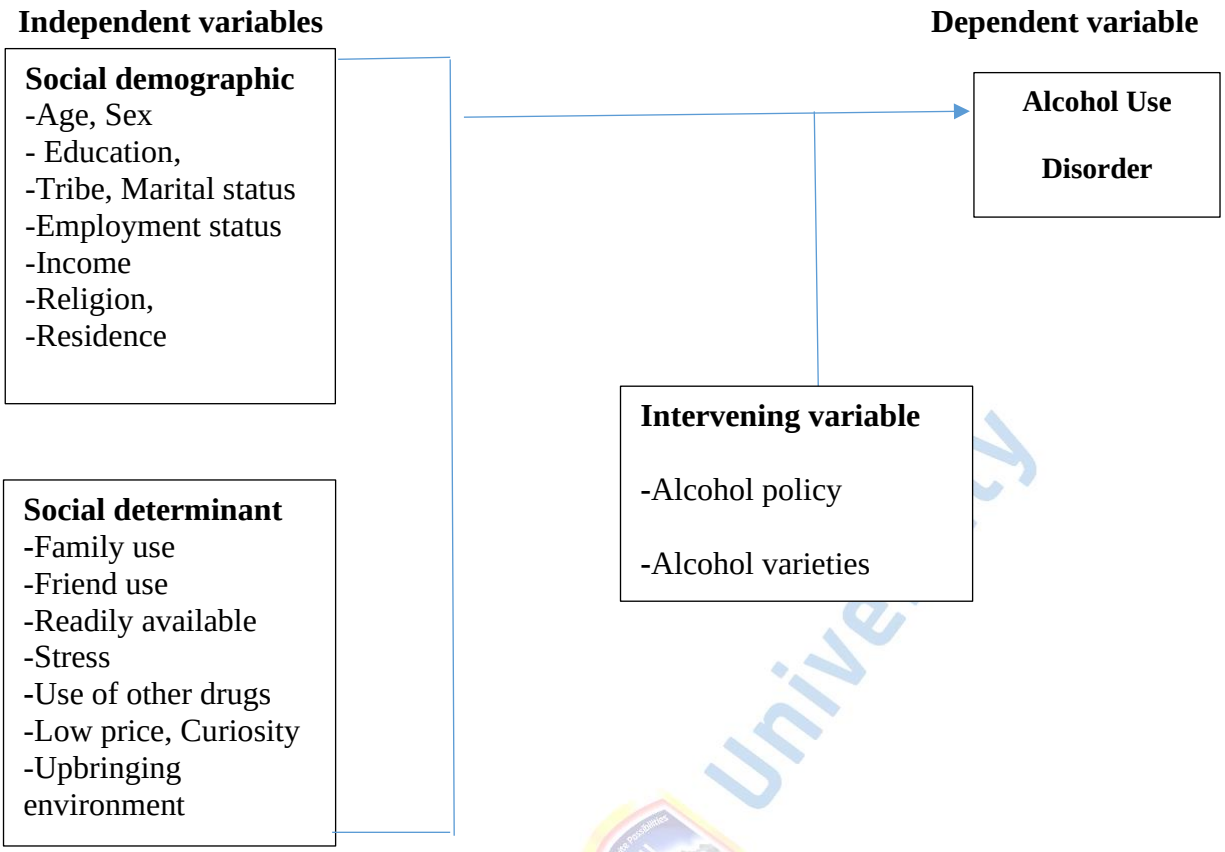

Figure 1: Conceptual framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research design

Analytical cross-sectional study with a mixed method approach, where both qualitative and quantitative questionnaires and key informant interviews were used to determine the prevalence and social determinant factors associated with alcohol use disorder among drivers of public service vehicles at Moshi bus terminal in Kilimanjaro region. This kind of study design enabled investigators to compare several variables simultaneously and describe what was happening at present, and the mixed methods gave the researcher a better understanding of the problem and provided complete evidence.

3.2 Study area

This study was conducted at the Moshi bus terminal in Kilimanjaro region. Moshi Urban was one among the seven districts of the Kilimanjaro Region which included; Siha, Rambo, Moshi Rural, Hai, Moshi, Mwanga and Same with a population of more than 180,000 people. Despite having a manufacturing industry, breweries and four prestigious universities, Moshi was home to Africa's largest mountain, Kilimanjaro. It also has well-connected infrastructures to nearby cities and the location of the largest referral hospital in northern Tanzania, Kilimanjaro Christian Medical Center (KCMC) serving more than 15 million people (Republic, Bureau, Ministry, & June 2013).

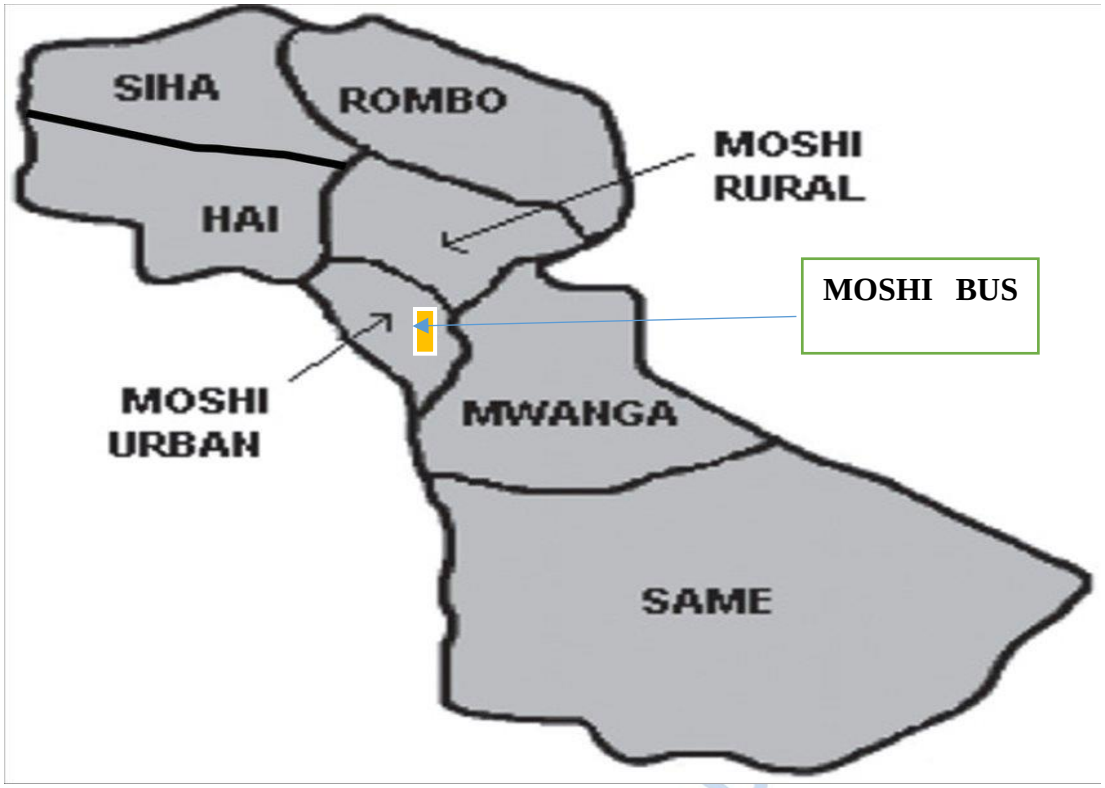

Figure 2: Map of Kilimanjaro Region

3.3 Target population

This study targeted all eighty hundred and fifty-four (854) drivers of public services vehicles in the Kilimanjaro region of Tanzania

3.4 Study population

This study involved two hundred ninety-three (293) of all eighty hundred and fifty-four (854) drivers of public service vehicles and 13 KII at the Moshi bus terminal in the Kilimanjaro region.

3.5 Inclusion Criteria

On-duty driver registered and having active driving license of a public service vehicle, doing their route with Kilimanjaro region and Stationed at the designated Moshi bus terminal in Kilimanjaro of Region Tanzania and having completed an informed consent form before beginning an interview.

3.6 Exclusion criteria

Public service drivers who carry people and products outside the Kilimanjaro Region and those who were not stationed at the Moshi bus terminal. Additionally, those drivers who did not consumed alcohol and did not provide informed consent were eliminated from the study.

3.7 Sample size determination

Using Fischer's formula (1998) in a finite population, the sample size was used as indicated below;

Fischer's formula: $\mathbf{n = (Z^2PQ)/d^2}$
Where:

n = preferred sample size
A 95% confidence level agreed upon by the typical standard deviation of **Z,** which was fixed at 1.96.

Since there was no known prevalence of alcohol use disorder among Tanzanian public transportation drivers, 50% of the target population's percentage, **P**=, will be utilized. (0.5%)

Q=1-P (0.5) (0.5)

5% of the degree of accuracy was specified at **d**. (0.05)
n= (1.962×0.5×0.5)/0.052 =384

Since the study population were 854 a finite method of the Fischer formula was used.
nf = n/(1+((n-1)/N)
Where; **n**=size of sample **N**=population

nf = 384/ 1+(384-1)/854) = 266 respondents, plus 10% non-respondents which was 27 which gave 293 respondents

There were also four key informant respondents, which included; two leaders from the driver's association, one police officer and one officer from Land and Transportation Regulatory Authority.

3.8 Sampling design

To choose the participant, a stratified propionate sample technique was employed. This approach guaranteed that information was gathered from each cluster of the public services drivers. Kilimanjaro region was divided into seven clusters (Siha, Rambo, Moshi Rural, Hai, Moshi urban, Mwanga and Same). Then a list of all drivers was produced and given identification numbers instead of names to ensure confidentiality, and then the lottery technique was used to choose drivers of the public service vehicle from each cluster. Then samples from each cluster were proportionally obtained.

The sample size for each cluster was determined using the formula below

ni = Ni × n/N

Where;

ni = was the stratum's sample size. **n**= sample of the Study's population

Ni = equals the stratum's population **N** =was the study overall population.

3.9 Instruments and methods for gathering data

During data collection, both qualitative and quantitative methods were employed, and questionnaires were developed. Audio-recorder used to record key informative interview information. Alcohol Use Disorders Identification Test (Bohn *et al*., 1995) Developed by the World Health Organization was used to quickly identify alcohol-related disorders (Bohn *et al*., 1995; Reinert & Allen, 2002). The 10-item self-administered alcohol screening tool covered questions 1-3, 4-6, and 7–10 on alcohol-related damage, as well as the conceptual categories of problematic alcohol use. A score of 0 to 4 was given to each response, with 40 being the highest possible (Vissoci *et al*., 2018).

A question like How frequently have you had an alcoholic beverage provides a way to measure the prevalence of alcohol use disorder. How often was the detection of binge drinking based

on the consumption of six or more drinks in one sitting? The scores in this study were distributed using the following cut-off points: ⩽7 indicates abstinence or low-risk usage; 8 to 15 indicates hazardous use; 16 to 19 indicates harmful use; and 20 to 40 indicates probable reliance. A score of ⩾8 indicates that drinking is unsafe (usage that could be harmful or hazardous or lead to dependence) (Bohn *et al*., 1995; Reinert & Allen, 2002; Vissoci *et al*., 2018).

3.10 Data Collection Procedures

Self-administered questionnaires were employed in a mixed technique to obtain quantitative data from study participants, while key informant interviews were used to gain qualitative data. Twenty-seven (27) respondents were randomly selected two weeks prior, and the questionnaire was created in English, translated into Swahili, and then back into English by language experts. Drivers of the public services vehicle at the Arusha bus terminal in the Arusha region of Tanzania then pretested the questionnaire. Questions that were confusing or ambiguous were modified and changed depending on the pretest and the actual data collection. While for qualitative four individuals were selected for the key informant interviews using the purposive sample method. A sample size of thirteen (13) key informant interviewees was estimated which included ten leaders of drivers at Moshi bus terminal, a Reginal Traffic officer from Moshi police station, one officer from Kilimanjaro Buses Association and one officer from the Land and Transport Regulatory Authority in Moshi.

An experienced moderator oversaw the discussions. An audio recorder was used to record the key informant in-depth interview's information in a selected location. Ten (10) to twenty (20) minutes was the duration of each interview. Only the participant and the interviewer were present during the Swahili-language interviews, which took place in a private room at the interviewee's home.

At the onset of data collection, the participants were apprised of the study's methodology and objectives by the researchers. The researchers also stressed that all information was kept private and that no harm occurred. Audio recordings from the interviews were made using encrypted equipment and uploaded to a secure database. After the qualitative data achieved thematic saturation, data collecting was stopped. In order to provide a comprehensive picture of the factors related with alcohol use disorder among drivers of public service vehicles in the Kilimanjaro area of Tanzania, audio recordings from the devices were destroyed after publication. The study utilized a convergent parallel design. The two data sets were acquired and examined independently. The respondents' opinions, experiences, and sentiments regarding drivers' alcohol consumption made up the qualitative section. These data were gathered, separately examined, and the results were triangulated for direct comparison.

3.10.1 Validity

Pretesting of the questionnaires was done at the Arusha bus terminal in the Arusha region of Tanzania and made sure they had all the information that was necessary to get the intended results, without leaving anything out. A road safety expert also pretested the interview questions.

3.10.2 Reliability

The extent to which a research tool after repeated testing produces accurate results. To pre-test the tool in this research area, 10% of the sample, or around fifty (50) drivers of the public service vehicle at the Arusha bus terminal in the Arusha region of Tanzania, were included; however, they were not included in the final study. To determine if the questionnaires were acceptable, equivalence tests were conducted on people who were chosen at random. The Coefficient Alpha was used to gauge internal consistency. According to the literature, an instrument was deemed reliable if its alpha coefficient was 70% or greater and was equal to or

higher than 0.70. SPSS version 23 was used to enter the data and perform a reliability check. The tool was accurate and consistent at 0.77.

3.11 Analysis and presentation of data

Data was checked for missing values, duplicates, and errors before doing analysis. Then analyzed by using Stata software version 15.0. Descriptive statistics was summarized by using proportions and frequency for categorical variables while Measures of central tendency and the corresponding measure of dispersion were used to summarize numerical variables. Using the Chi-square test, the associations between the categorical variables were examined. A log-binomial was used to determine factors associated with alcohol use disorder among Drivers of public service vehicles at the Moshi bus terminal in the Kilimanjaro region of Tanzania. Multivariable log-binomial was used to control for confounders and to test interaction. The model that had the lowest Akaike Information Criteria (AIC) was regarded as being parsimonious. All tests were two-tailed, with a 5% significant level. Data was presented using textual, table and diagrammatic presentation.

In qualitative data, the audio recorded information from key informant interviews were transcribed verbatim then analyzed using content and thematic analysis approach and presented in themes**.** Using the first set of interviews, a qualitative researcher created the original codebook using a data analyst carried out the coding, and through conversations between data analysts and interviewers during the data collecting process, an emergent codebook was created and maintained to validate the generated topics and our interpretation of the findings. Combination of deductive and inductive analytical techniques. Google spreadsheets were used to code and analyze the de-identified transcripts, allowing the study team to work closely together and exchange questions and comments as the coding process progressed.

The mixed approach of data collecting, which includes both qualitative and quantitative phases, shown below, along with the analysis, comparison, and interpretation of the data.

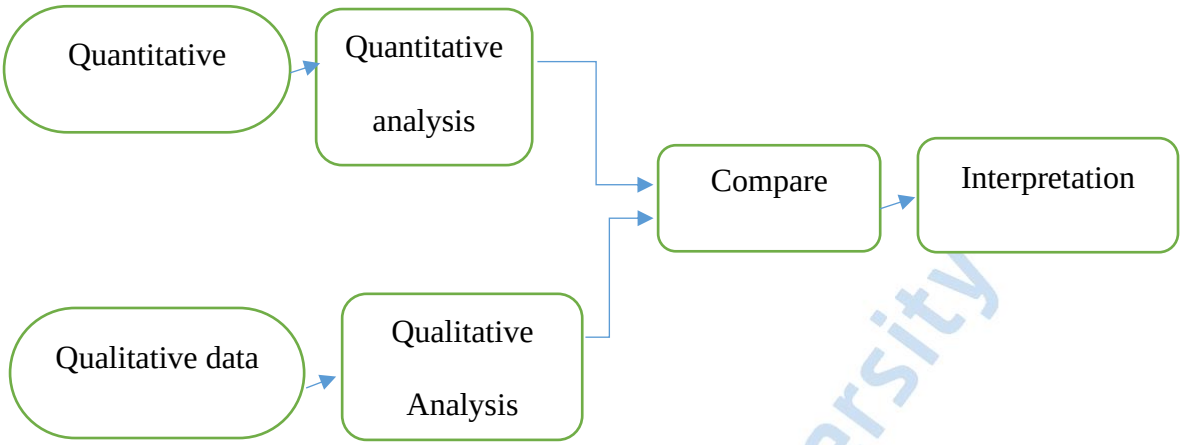

Figure 3: Integrating quantitative and qualitative data gathered methods before interpreting the results

3.12 Ethical clearance

Mount Kenya University's Institutional Ethics and Review Committee (IEREC) provided an ethical clearance (**approval number 1760**) letter of introduction while in Tanzania, KIDH-NMAIST-CEDHA Health Research Ethics Committee (KNCHREC) gave **approval No: KNCHREC00001/05/2023** to conduct the study in the area. Before distributing questionnaires, informed consent was sought. Participants were allowed to contact directly with researcher and ask questions. The participant's privacy and confidentiality were ensured, Respondents signed a consent form after being given appropriate information about the objective and importance of research before data collection and the use of numerical codes in place of names or vehicle registration. To address their needs or interests in mental health, participants were also assisted by mental health care providers during data collection.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

The overall response rate was 98.98% and the mean (SD) was 2.31 (±0.95). All of the respondents were men. This study was able to recruit two hundred and ninety-three (293) participants, of whom three refused to take part. Out of eighty hundred and fifty-four (854) public service drivers (population), two hundred and ninety-three (293) participants (sample size) in this study are represented by the tree diagram below in Figure 4.1. Three (3) individuals out of the entire sample refused to participate, while two hundred and ninety-two (292) respondents did not. Of the individuals who did not decline, two hundred and forty-three (243) admitted to drinking alcohol and forty-nine (49) said they did not, while ninety (90) respondents who drank alcohol reported non-hazardous usage, whereas one hundred and fifty-three (153) reported harmful use out of the two hundred and forty-three (243) who drank.

The figure below shows how participants were selected

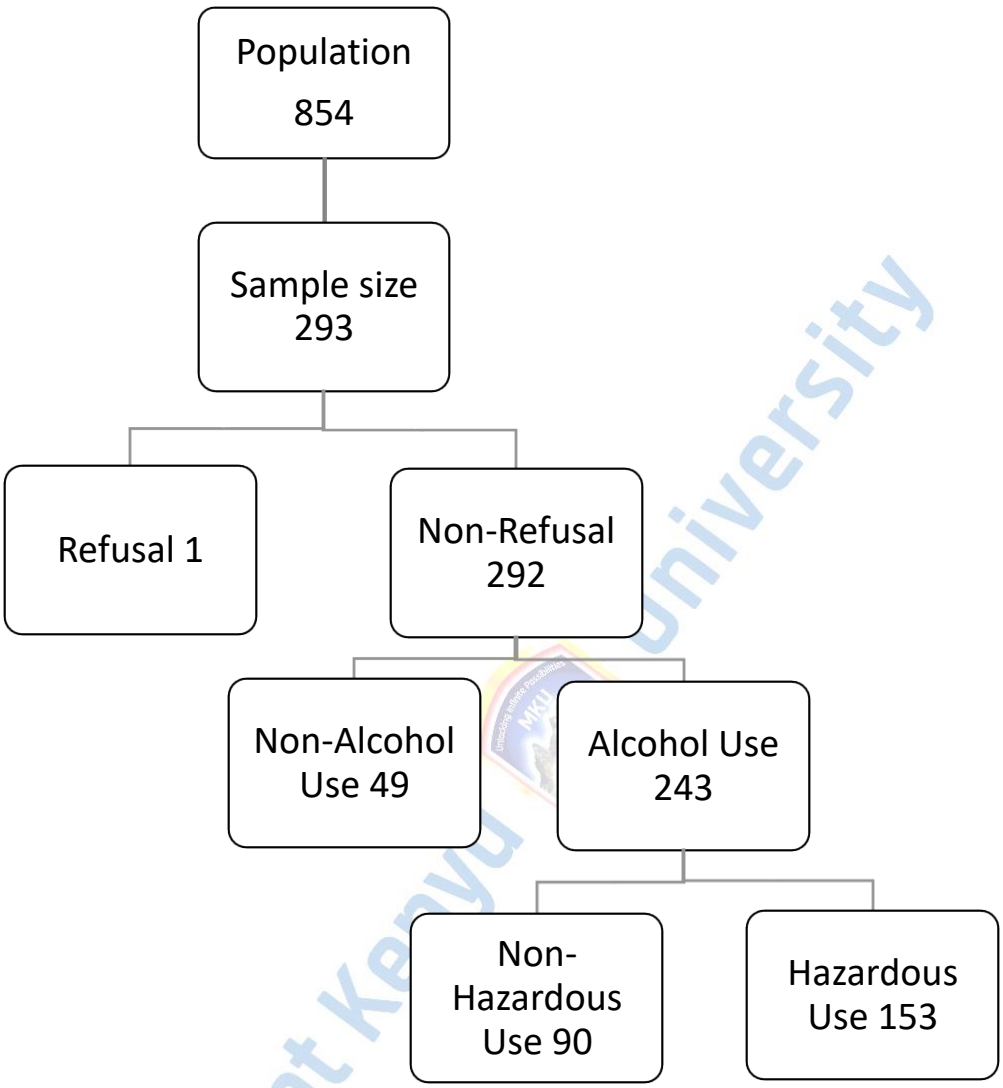

Figure 4. 1: Flow chart for participant selection

4.2 Proportion of alcohol use

The analysis presented in Figure 4.2; below illustrates the proportion of alcohol use among all respondents. From the entire sample, it was discovered that 83.0% of the respondents admitted to drinking while (17%) were harmless users. This finding suggests that alcohol consumption is quite prevalent in the group under study.

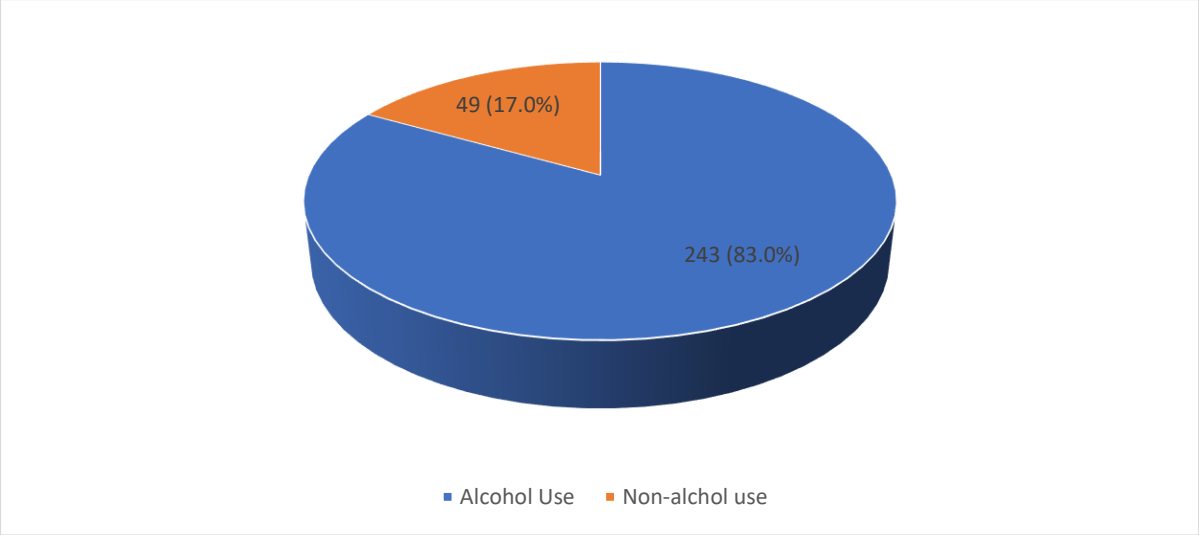

Figure 4.2: Proportion of alcohol use

4.3 Socio-demographic characteristic of the respondent

Table 4.1 below shows the analysis of the socio-demographic characteristics of two hundred and ninety-two (292) respondents, within the sample population revealing several noteworthy observations. Eighty-two per cent (82.5%) of the public service vehicle drivers were employed, while fifty per cent (50%) of them were aged between 30 to 39 years. However (55.5%) of the drivers had income ranging from fourteen thousand and six hundred to twenty-four thousand and six hundred Tanzanian shillings (14600–24600 TZS). Sixty-three percent (63.7%) of the sampled public service vehicle drivers were married and Sixty-five percent (65%) of these drivers lived in rural areas. Also, seventy-six per cent (76.4%) of them identified as Christian religious believers. Fifty-six per cent (56.8%) of these drivers belong to the Chagga tribe. In regard, sixty-nine per cent (69.9%) of the drivers had primary or no education.

Table 4. 1: Frequency distribution table for Socio-demographic Characteristics (n=292) linked to alcohol use disorder

Variable	Categories	n(%)
Age		
	20-29	46(15.8)
	30-39	**149(50.0)**
	40-49	82(28.1)
	50 and above	18(6.2)
Education		
	primary or no	**204(69.9)**
	secondary and above	88(30.1)
Income		
	4500-14500	61(20.9)
	14600-24600	**162(55.5)**
	24700-34700	53(18.2)
	35000 and above	16(5.5)
Marital Status		
	Single	60(20.4)
	Separated	31(10.5)
	Divorced	6(2.0)
	Widowed	7(2.4)
	Married	**188(63.7)**
Residence		
	Urban	103(34.6)
	Rural	**191(65.4)**
Religion		
	Muslim	64(21.9)
	Christian	**223(76.4)**
	Non	5(1.7)
Employment Status		
	Employed	**241(82.5)**
	Own or Self-employed	51(17.5)
Tribe		
	Chagga	**166(56.8)**
	Pare	56(19.2)
	Maasai	8(2.7)
	Sambaa	21(7.2)
	Iraq	4(1.4)
	Nyaturu	15(5.1)
	Meru	11(3.8)

4.4 Prevalence of alcohol use disorder among divers of public services vehicle

The analysis indicated in Figure 4.3 below shows the proportion of hazardous alcohol use according to the Alcohol Use Disorder Identification Test (AUDIT) cut-off score, a significant number of respondents showed hazardous alcohol consumption, as seen below. The majority of respondents (37%) are classified as low risk, a notable portion of respondents (16%) exhibit possible dependence, a considerable proportion of respondents (23%) demonstrate an increasing level of risk and lastly, 24% of respondents fall into the higher-risk category, this signifying an elevated level of risk associated with their alcohol consumption pattern

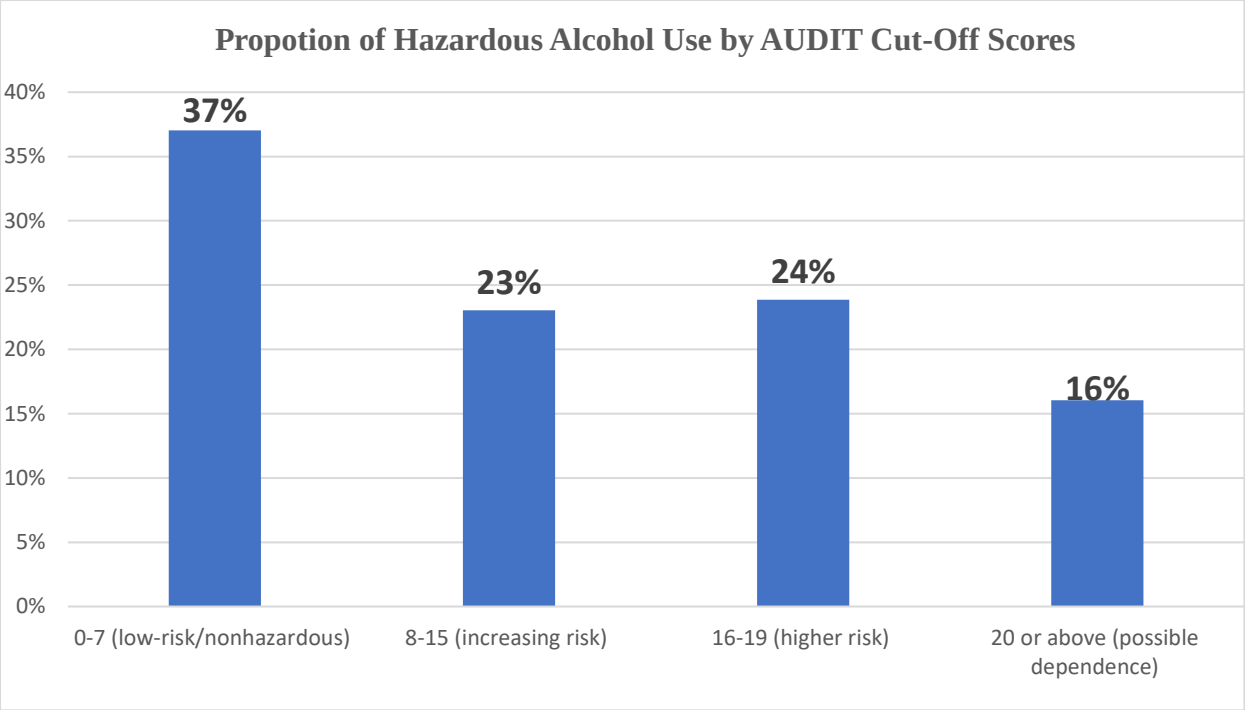

Figure 4: Proportion of hazardous alcohol use by Alcohol Use Disorder Identification Test Cut-Off Scores

4.4.1 Alcohol use disorders

After grouping non-hazardous, increasing risk, high risk and possible dependence together we got two groups of alcohol user disorders which are Non-hazardous alcohol user AUDIT cut-off score 0-7 and Hazardous alcohol user (increasing risk, high risk and possible dependence) AUDIT cut-off score ≥8 as shown on the figure 4.1.4; below.

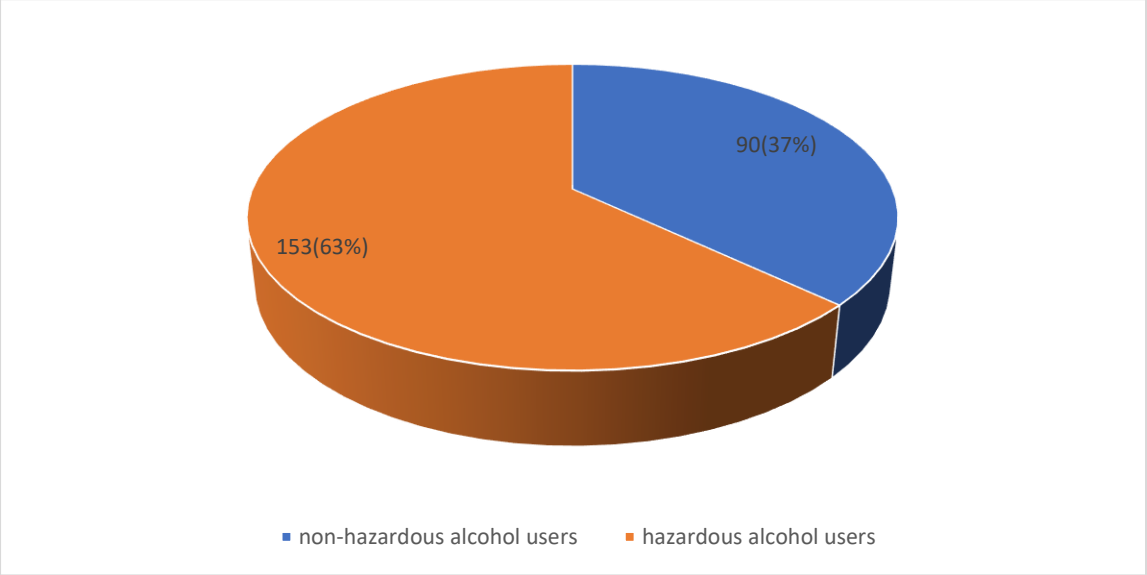

Figure 4. 3: Alcohol use disorders

4.5 Association between alcohol use disorder and socio-demographic factors

The analysis in Table 4.2: below reveals significant associations between alcohol use disorder and socio-demographic factors like Age, income, religion, Tribe and employment status demonstrate statistically significant associations. These findings highlight the importance of considering these factors when addressing alcohol use disorder in implementing appropriate interventions and prevention strategies. It's vital to remember that these socio-demographic characteristics are possible effects rather than causes of alcohol consumption disorder. The experience of each person varies, and several elements combine to lead to the emergence of alcohol-related problems. To address the specific needs of drivers of public service vehicles, preventative and intervention measures can be more effectively tailored with an understanding of these socio-demographic characteristics. However, there were no significant associations

observed for education level, marital status, and area of residence by Chi-square test and Fisher's exact test was employed for the variable with an expected count of 5 or less.

Table 4. 2: Association between alcohol use disorder and socio-demographic factors

Variable	Non-hazardous alcohol users	Hazardous alcohol users	
	n(E)	n(E)	p-value
Age			
20-29	**15(12.6)**	**19(21.4)**	**0.008*** **
30-39	47(46.33)	78(78.7)	
40-49	18(25.9)	52(44.1)	
50+	10(5.2)	4(8.8)	
Education level			
primary or no	**56(62.6)**	**113(106.4)**	**0.057**
secondary and above	34(27.4)	40(46.6)	
Income			
4500-14500	**24(17.0)**	**22(29.0)**	**0.002*** **
14600-24600	41(54.4)	106(92.6)	
24700-34700	19(14.8)	21(25.2)	
35000 and above	6(3.7)	4(6.3)	
Marital Status			
Single	**18(17.4)**	**29(29.6)**	**0.995**
Separated	9(9.6)	17(16.4)	
Divorced	1(1.5)	3(2.5)	
Widowed	2(2.2)	4(3.8)	
Married	60(59.3)	100(100.7)	
Residence			
Urban	**39(33.3)**	**51(56.7)**	**0.119**
Rural	51(56.7)	102(96.3)	
Religion			
Muslim	21(14.1)	17(23.9)	
Christian	**68(74.8)**	**134(127.2)**	**0.028*** **
Non	1(1.1)	2(1.9)	
Employment Status			
Employed	**61(73.3)**	**137(124.7)**	**0.000*** **
Own or Self-employed	29(16.7)	16(28.)	
Tribe			
Chagga	**44(55.2)**	**105(93.8)**	**0.015*** **
Pare	18(13.7)	19(23.3)	
Maasai	1(2.2)	5(3.8)	
Sambaa	10(5.2)	4(8.8)	
Iraq	1(1.5)	3(2.5)	
Nyaturu	6(5.2)	8(8.8)	
Meru	4(3.3)	5(5.7)	
Other	6(3.7)	4(6.3)	

*** Statistically significance, for variables with expected count <5 fisher's exact test was used

4.5.1 Multiple logistic regression model of drivers' demographic associated with hazardous alcohol use

Table 4.3 below shows the comparison between the crude and adjusted models for demographic factors revealing interesting findings. In the crude model, certain categories of variables show associations with hazardous alcohol use, but after adjusting for other factors, some associations become non-significant or weaker. Regarding age, in the crude model, drivers who are aged between 40-49 years old had a 28% higher prevalence ratio (PR=1.28;95%CI;0.9 to 2.37; P=0.43) of developing alcohol use disorder as compared to drivers aged between 20 to 29 years old but this was not statistically significant. Drivers of this age have so many responsibilities to accomplish and their income was minimal making them stressed and opting for alcohol as a coping mechanism. Even though drivers with secondary education and above had a 2% less prevalence ratio (PR=0.98; 95%CI; 0.66 to 1.44; P=0.91) of developing alcohol use disorder compared to those with primary or no primary education but not significantly, the reason could be they understand the consequences of drinking more. Drivers having income ranging from14,600 to 24,600 Tanzanian shilling had a 35% higher prevalence ratio (PR=1.35; 95%CI; 0.82 to 2.22; P=0.23) of being hazardous use compared to those earning an income of 4,500 t0 14,6000 Tanzanian shillings non-significant, this could be due to rich people may afford to purchase a variety of alcoholic beverages regularly. Married divers had a 92% higher prevalence ratio (PR=1.08; 95%CI; 0.66 to 1.75; P=0.75) of becoming hazardous users compared to single.

Those who resided in rural had a 10% lower prevalence ratio (PR=0.90; 95%CI; 0.67 to 1.43; P=0.94) of hazardous use compared to those living in urban areas. Non-religious drivers had a 43% higher prevalence ratio (PR=0.57; 95%CI; 0.32 to 7.60; P=0.58) of becoming hazardous use compared to Muslims. Drivers belonging to the Iraq tribe had a 25% higher prevalence ratio (PR=1.25; 95%CI, 0.25 to 6.21; P=0.79) of hazardous compared to other tribes like Haya

and Nyiramba while Being self-employed or owning a public service vehicle showed 48% less prevalence of developing hazardous alcohol use (PR=0.52; 95%CI, 0.27 to 0.94; P=0.04) compared to employed divers this was statistically significant. Reason self-employed is similar to being a supervisor, owning a car entails daily oversight of the job and vehicle condition to ensure a good return on investment and minimal chance of dangerous alcohol use. These findings suggest that while some demographic factors like income, age tribe, and religion showed associations with hazardous alcohol use, these associations were attenuated or no longer significant in the adjusted model except income in crude. However, the strong protective association of being self-employed or owning a public service vehicle persisted even after adjusting for confounding variables and remained statistically significant.

Table 4. 3: Comparison between Crude and Adjusted model for demographic factor

Variable	Categories	Crude			Adjusted		
		PR	P-Value	95% CI	PR	P-value	95% CI
Age							
	20-29	1.00			1.00		
	30-39	1.12	0.51	0.80, 1.55	1.11	0.71	0.63,1.96
	40-49	**1.33**	**0.9**	**0.95, 1.84**	**1.28**	**0.43**	**0.69,2.37**
	50 +	0.51	0.135	0.21, 1.23	0.58	0.36	0.18,1.84
Education							
	Primary or no	1.00			1.00		
	Secondary and above	**0.82**	**0.094**	**0.65, 1.03**	**0.98**	**0.91**	**0.66,1.44**
Income							
	4500-14500	1.00			1.00		
	14600-24600	**1.46**	**0.015*** **	**1.07, 2.00**	**1.35**	**0.23**	**0.82, 2.22**
	24700-34700	1.07	0.74	0.70, 1.62	1.21	0.56	0.63, 2.32
	35000 and above	0.81	0.627	0.36, 1.84	1.34	0.64	0.40, 4.47
Marital Status							
	Single	1.00			1.00		
	Separated	1.1	0.752	0.73, 1.51	0.99	0.97	0.51, 1.89
	Divorced	1.2	0.53	0.66, 2.23	1.01	0.98	0.29,3.47
	Widowed	1.1	0.803	0.58,1.98	1.07	0.91	0.35,3.19
	Married	**1.01**	**0.921**	**0.78,1.31**	**1.08**	**0.75**	**0.66,1.75**
Residence							
	Urban	1.00					
	Rural	**1.70**	**0.134**	**0.95,1.45**	**0.90**	**0.94**	**0.67, 1.43**
Religion							
	Muslim	1.00			1.00		
	Christian	1.40	0.35	1.02, 2.13	1.40	0.21	0.82, 2.38
	Non	**1.50**	**0.37**	**0.62, 3.57**	**1.57**	**0.58**	**0.32, 7.60**
Employment Status							
	Employed	1.00			1.00		
	Own or Self-employed	**0.51**	**0.001*** **	**0.34, 0.76**	**0.52**	**0.041*** **	**0.27, 0.94**
Tribe							
	Others	1			1		
	Chagga	1.76	0.147	0.81, 3.78	1.01	0.975	0.35, 2.9
	Pare	1.28	0.551	0.56, 2.91	1.15	0.8	0.37, 3.57
	Maasai	2.08	0.086	0.9, 4.82	1.07	0.922	0.25, 4.54
	Sambaa	0.71	0.557	0.23, 2.19	0.61	0.510	0.14, 2.62
	Iraq	**1.87**	**0.193**	**0.72, 4.83**	**1.25**	**0.785**	**0.25, 6.21**
	Nyaturu	1.42	0.429	0.59, 3.45	1.19	0.788	0.33, 4.24
	Meru	1.38	0.501	0.53, 3.61	0.96	0.959	0.24, 3.84

*** Statistically significance

4.6 Association between Social Determinant factors and alcohol use disorder

Table 4.4.1 below illustrates the chi-square analysis. Indicates that drivers who started consuming alcohol because of the following reasons (social determinants), type of alcoholic beverages consumed, other reasons, friend use, curiosity, parent use, stress, Influence from their current spouse, culture, history of other drug use, readily available, low price, siblings, were associated with hazardous alcohol user and that was statistically significant. But reason like upbringing environment was not associated with hazardous alcohol use

Table 4. 4: Association between alcohol use disorder and social determinants factors

Variable	Non-hazardous alcohol users	Hazardous alcohol users	
	n(E)	n(E)	p-value
Types of alcoholic beverages consumed			
Industrial	**84(52.2)**	**57(88.8)**	**0.001*** **
Traditional	2(1.5)	2(2.5)	
Both	4(36.3)	94(61.7)	
Friend use			
No	**16(5.9)**	**0(10.1)**	**0.001*** **
Yes	74(84.1)	153(142.9)	
Curiosity			
No	**52(32.2)**	**35(54.8)**	**0.001*** **
Yes	38(57.8)	118(98.2)	
Parent use			
No	**42(28.9)**	**36(49.1)**	**0.001*** **
Yes	48(61.1)	117(103.9)	
Upbringing environment			
No	2(2.2)	4(3.8)	
Yes	**88(87.8)**	**149(149.2)**	**0.849**
Stress (work or family related)			
No	**78(47.0)**	**49(80.0)**	**0.001*** **
Yes	12(43.0)	104(73.0)	
Current spouse			
No	**85(72.6)**	**111(123.4)**	**0.001*** **
Yes	5(17.4)	42(29.6)	
Culture			
No	**47(37.4)**	**53(63.0)**	**0.01*** **
Yes	43(53.0)	100(90.0)	
Readily available			
No	**14(5.2)**	**0(8.8)**	**0.001*** **
Yes	76(84.8)	152(144.2)	
History of other drug use			
No	**85(60.0)**	**77(102.0)**	**0.001*** **
Yes	5(30.0)	76(51.0)	
Source of alcoholic beverage used			
Shop	**32(13.3)**	**4(22.7)**	**0.001*** **
Bar	22(10.4)	6(17.6)	
Bar and Shop	36(66.4)	143(112.7)	
Other Reasons			
No	**84(56.3)**	**68(95.7)**	**0.001*** **
Yes	6(33.7)	85(57.3)	
Low price			
No	**48(22.2)**	**12(37.8)**	**0.001*** **
Yes	42(67.8)	141(115.2)	
Siblings use			
No	**60(30.4)**	**22(51.6)**	**0.001*** **
Yes	30(5939)	131(101.4)	

*** Statistically significance, for variables with expected count <5 fisher's exact test was used

4.6.1 Multiple logistic regression model of drivers' social determinant associated with hazardous alcohol use

Table 4.5 below indicates the results from the statistical analysis comparing the crude and adjusted models for social determinants of hazardous alcohol use as indicated. The statistical significance of the associations is indicated by the p-values, where $p < 0.05$ denotes a significant association. When examining the types of alcohol consumed, no significant associations were found in the adjusted model, indicating that the choice between traditional and industrial alcohol does not independently contribute to hazardous alcohol use. Similarly, the reason for starting alcohol consumption due to curiosity, parent use, other drug use, culture, other reasons, and current spouse did not show significant associations in the adjusted model. However, several factors demonstrated significant associations with hazardous alcohol use even after adjusting for other variables. Starting alcohol consumption due to low price, stress (work or family-related), and source of alcoholic beverages, exhibited increased risks of hazardous alcohol use in both the crude and adjusted models ($p < 0.05$). This suggests that these social determinants have a statistically significant impact on the likelihood of engaging in hazardous alcohol consumption. On the other hand, factors such as starting alcohol consumption due to parent use, culture, current spouse, siblings other drug use and other reasons showed significant associations in the crude model but lost statistical significance in the adjusted model ($p > 0.05$). This indicates that these factors may have confounding effects that were accounted for in the adjusted analysis.

Table 4 Comparison between Crude vs Adjusted model for a social determinant factor

		Crude			Adjusted		
Variable	**Categories**	**PR**	**p -Value**	**C.I**	**PR**	**P-value**	**C.I**
Types of alcoholic beverages used							
	Tradition	1			1		
	Industrial	0.8	0.677	0.29, 2.19	1.0	0.989	0.23, 4.15
	both	**1.9**	**0.119**	**0.71, 5.11**	**1.3**	**0.734**	**0.31,5.21**
Curiosity							
	No	1			1		
	Yes	**1.88**	**0.001*** **	**1.43, 4.46**	**1.1**	**0.768**	**0.70, 1.59**
Parent use							
	No	1			1		
	Yes	**1.53**	**0.001*** **	**1.18, 1.99**	**0.92**	**0.777**	**0.52, 1.61**
Upbringing environment							
	No	1			1		
	Yes	**0.94**	**0.841**	**0.53, 1.67**	**0.75**	**0.603**	**0.26, 2.18**
Stress (work or family related)							
	No	1			1		
	Yes	**2.32**	**0.001*** **	**1.85, 2.91**	**1.56**	**0.027*** **	**1.05, 2.32**
Current spouse							
	No	1			1		
	Yes	**1.57**	**0.001*** **	**1.34, 1.84**	**1.07**	**0.734**	**0.72, 1.58**
Culture							
	No	1			1		
	Yes	**1.31**	**0.01*** **	**1.06,1.63**	**0.78**	**0.356**	**0.47,1.31**
History of other drug use							
	No	1			1		
	Yes	**1.97**	**0.001*** **	**1.66,2.34**	**0.92**	**0.68**	**0.63, 1.34**
Source of alcoholic beverage used							
	Shop	1					
	Bar	1.92	0.269	0.6, 6.18	1.93	0.313	0.53, 6.86
	Bar and Shop	**7.18**	**0.001*** **	**2.84, 18.16**	**3.84**	**0.01*** **	**1.37, 10.72**
Low price							
	No	1			1		
	Yes	**3.85**	**0.001*** **	**2.30, 6.42**	**2.06**	**0.025*** **	**1.09, 3.88**
Sibling use							
	No	1			1		
	Yes	**3.03**	**0.001*** **	**2.10, 4.36**	**1.66**	**0.062**	**0.097, 2.85**
Other reasons							
	No	1			1		
	Yes	**2.08**	**0.001*** **	**1.73, 2.51**	**1.20**	**0.302**	**0.084, 1.72**

*** Statistically significance N:B; other reasons = (confidence, peace, concentration)

4.7 Qualitative analysis

A total of thirteen (13) participants enrolled in this study all were male, one Regional traffic officer, ten leaders of drivers of public service vehicles at Moshi bus terminal in Kilimanjaro, one officer from the Kilimanjaro buses Association and one from the Land transport association, were interviewed and recorded information then translated to English. The most common factors for Alcohol Use Disorder that emerge from the driver of public service vehicles are Stress, cheap alcohol, cultural norms, curiosity, parent usage, use of other drugs, confidence, financial difficulty, religion

4.7.1 Parent use

According to respondent number one, some parents provide alcohol to their kids as medicine because they think it would heal their cough or illness. Other parents, particularly those of the males, proudly introduce alcohol to their kids and are content that their sons like drinking as much as they do. This frequently leads to the family's fundamental needs not being met, which subsequently causes issues like child neglect and domestic violence.

"Even if the drunkard man gets sick, he doesn't care and will use any money a friend gives him to buy food or drugs he will use it to buy alcohol, relatives and friends are the ones who struggle to find ways to stop their drunk friends from drinking"
(KII, Respondent 1 alcohol drinker)

4.7.2 Other reason

Other reasons like, confidence, peace and concentration were the most common explanations for drinking alcohol given by second respondents for relaxation, sociability, and the desire to overcome nervousness and confidently approach possible sexual partners.

"It gives me more energy to carry out my duties of working hard to take care of my family which makes me happy, especially for someone like me who lacks the strength to drive a PSV."
(KII, Respondent 2 alcohol drinker)

4.7.3 Stress

According to respondent number three, demands and stress from the workplace were a major factor. The demanding nature of their work, long hours, and dealing with difficult passengers can lead to increased stress levels. Some drivers may turn to alcohol as a way to cope with these pressures, which can eventually develop into a disorder.

"We use alcohol as a coping mechanism, if drivers manage their stress effectively alcohol use disorder and accidents will be reduced."

(KII, Respondent 3 alcohol drinker)

4.7.4 Current spouse

Some drivers turn to alcohol as a coping mechanism for their troubles, disappointments, and dangerous relationships with others.

"You realize that some of us have highly argumentative spouses with whom we never have peace at home. To avoid arguing or fighting with my quarrelsome wife, I would like to spend my time in bars and go home to sleep"

(KII, Respondent 4 alcohol drinker)

4.7.5 History of other drug use

It has been reported that some heavy drinkers would frequently change the brands of alcohol they consumed to experience the effects of drunkenness more quickly.

"To feel all of the effects of alcohol, some drivers like to combine beer, locally produced alcoholic and industrial spirits. You might end up urinating in public, though, if you're not senior or have never used this mixture''

(KII, Respondent 5 alcohol drinker)

4.7.6 Upbringing environment

There have been histories in the Kilimanjaro region of parents manufacturing, selling, and consuming alcohol when their children are little.

"Because alcohol is readily available and sold in family homes, I started drinking when I was four years old, and by the time they are eighteen, I am an expert. They suggested said a 14-year-old adolescents could consume more alcohol than an adult. Because of this, adolescents who drink grow up very quickly"

(KII, Respondent 6 alcohol drinker)

4.7.7 Readily Available Alcoholic Beverages

The fourth interviewee discussed how easily accessible and readily available alcohol is. According to him, drivers may develop hazardous drinking habits if they work in a workplace where alcohol is easily accessible or if they have easy access to it during their breaks

"We are enjoying nearly every shop sells alcohol even around car motor parks you drink as much as you can but some get drunk and fail even to drive their vehicle and let the conductor drive"

(KII, Respondent 7 alcohol user)

4.7.8 Friend use

The eighty respondents mentioned peer pressure and social norms as reasons why drivers could be influenced by their coworkers or the overall driving community, where excessive drinking and alcohol use are accepted norms.

Some of the individuals who drank heavily used the Bible as justification for their behaviour, emphasizing that one of Jesus' miracles was turning water into wine. Others argued that since alcohol would not exist in heaven, it is acceptable to drink here on Earth.

(KII, Respondent 8 alcohol drinker)

4.7.9 Culture

Some drivers who used large amounts of alcohol had more positive perceptions of the substance as a beverage that has been consumed for a long time, as a necessary component of family survival, and as a significant product that is commonly used in many cultures to show pride. It was said that certain heavy drinkers in society formed groups of support to further their interests as alcoholics since the drinking culture had become so established. Some defended their drinking by citing biblical accounts of Jesus' miracle of turning water into wine, while others argued that since alcohol would not exist in heaven, it is perfectly OK to drink here on Earth.

"It was found that some parents give their children alcohol as medicine because they think it may treat diseases like the flu and cough. It was additionally observed that some parents,

particularly younger guys, openly introduce alcohol to their young children and express happiness when their sons join"
(KII, Respondent 9 alcohol drinker)

4.7.10 Education

Individuals who operate public vehicles and have little or no formal education claim that these drivers tend to drink more and are more likely to acquire alcohol use disorders.

"Education helps to understand the risk associated with alcohol use
(KII Respondent 10 alcohol user)

4.7.11 Low price

Low alcohol prices can lead to increased drinking and the development of alcohol use disorders among individuals who use alcohol.
Alcoholic beverages is now easily accessible with low price therefore some individual prefer to drink alcohol rather than drinking water.
(KII, Respondent 11 alcohol user)

4.7.12 Income

Also drivers with higher income tend to drink more "because they able to buy on regular basis"

(KII Respondent 12 alcohol user)

4.7.13 Age

Older drivers tend to drink a lot because they have a lot of responsibilities that they find difficult to fulfil and end up feeling anxious.

"S*tart drinking as the coping mechanism to relax"*
(KII, respondent 13 alcohol user)

4.8 Discussion

4.8.1. Prevalence of alcohol use disorder

There was limited information available about the risk factors for alcohol use disorder among public transportation drivers in Tanzania. Thus, the purpose of this study was to ascertain the prevalence of alcohol use disorder and the social characteristics that are linked to it among

public transportation drivers at the Mosh bus terminal in the Tanzanian province of Kilimanjaro. Our finding revealed a 63.0% prevalence of hazardous alcohol use among the drivers of public services vehicles at the Moshi bus terminal in the Kilimanjaro region. These findings were somewhat higher than the 61.5% prevalence of hazardous alcohol use discovered by a cross-sectional survey done among motorcycle taxi drivers in the Kinondoni District of Dar es Salaam Tanzania in 2018 (Daniel W Kitua *et al*, 2018). Although the results exceeded the prevalence of 26.5% recorded in a cross-sectional study done among undergraduate students at Jimma University in Ethiopia in 2020, (Alemu, Soboka, Tesfaye, Ahmed, & Tesfaye, 2020). Furthermore, a 6.6% prevalence was observed in another investigation. It also continues to be higher than the prevalence of 6.4% found in the household survey conducted at a demographic surveillance site in rural Kenya (Jenkins *et al*., 2015). These variations in the prevalence of alcohol use disorder may result from environmental, cultural, social, economic, and religious factors.

4.8.2. Socio-demographic factors associated with alcohol use disorder

In our study, drivers aged between 30 to 39 years old had a 33 % higher prevalence ratio of becoming hazardous alcohol users than those aged between 20 to 29 years. This was comparable to the cross-section survey carried out in Tanzania in 2018 (Daniel W Kitua *et al*., 2018), another conducted in the USA in 2016 and in Tanzania in 2019, and done in Nigeria year 2011 (Bello *et al*., 2011). But different to studies done in Brazil and Norway in 2019. Drivers of this age have so many responsibilities to accomplish and their income is minimal making them to be stressed and opting for alcohol as a coping mechanism. While drivers with secondary education or higher were 48% less likely to become hazardous users than those with primary education or no formal education. Similar to studies done in Tanzania in 2018 (Daniel W Kitua *et al*., 2018), in Nigeria in 2011(Bello *et al*., 2011), and in France (Devaux & Sassi, 2016), but different to studies done in Tanzania in 2015 and Ghana in 2014. The reason could

be they understand the consequences of drinking more. Religion was associated with hazardous alcohol use and this finding was comparable to research done in Nigeria in 2011 (Bello *et al*., 2011), and Tanzania in 2015.

The reason was active religious followers are less likely to drink than non-religious followers because several religions discourage alcohol use to promote health, while other religion-related organizations teach their adherents to use alcohol sensibly and abstain from it during working hours. The risk of developing an alcohol use problem was 46% times greater prevalence ratio among individuals with incomes ranging between 14,600 and 24,600 Tanzanian shillings compared to those with incomes ranging between 4500 and 14500 Tanzanian shillings, This was similar to research conducted in 2011 in Nigeria (Bello, Ndifon, Ikpeme, Fatiregun, & Oyo-Ita, 2011). This could be due to high income makes them afford to purchase a variety of alcoholic beverages regularly. Even though this study revealed that married drivers had an 8% higher prevalence ratio of being hazardous users compared to those who are single, Also agreed with a study conducted in Australia in 2012 (Liang & Chikritzhs, 2012). Regardless of their faith, those who have been discovered to be martially separated are more prone to drink more alcohol than single people do as a stress-reduction mechanism.

Further, it was found that drivers who lived in rural areas had a 1.7 times higher prevalence ratio of developing hazardous alcohol use than urban living drivers, which could be due to the strong drinking culture, drinking was a popular means of socializing, celebrating, and getting together with friends. When it comes to possibilities for having fun and socializing with others, the neighbourhood bar or shop is often one among a few, as well as limited access to medical services, such as mental health professionals, health professionals, and alcohol counselling and treatment. Another lack of privacy in rural areas probably knowing the local nurse or counsellor, so you may be hesitant to talk about your drinking with someone but this was not statistically significant. The adjusted model also found no evidence of any associations between religion

and risky use of alcohol. Being self-employed or owning a vehicle shows a strong protective association with hazardous alcohol use in both the crude (PR=0.51, p=0.001) and adjusted models (PR=0.52, p=0.041).

This might be explained by the restrictions and limitations in the contract that place limits on the employee's ability to consume alcohol. Moreover, the employee is required to submit to the employer a certain amount of their income at regular intervals this would reduce income, which has been related to risky alcohol usage, agree to a study done in Tanzania in 2015 (Francis *et al*., 2015). These results imply that although several demographic characteristics initially showed connections with hazardous alcohol consumption, these relationships were diminished or no longer significant after controlling for other factors. But even after controlling for confounding factors, the large protective relationship between being self-employed and owning a vehicle was maintained.

4.8.3. Social determinants factors factor associated with alcohol use disorder

The low price was linked with alcohol use disorders. Drivers who drink because of low price had two times higher prevalence ratio of developing alcohol use disorder compared to those who don't drink alcoholic beverages because of low price (PR= 2.06; 95%CI, 1.09 to 3.88; P=0.03), which was consistent with other research showing that a greater perceived cost can considerably minimize drinking alcohol beverages (Staton *et al*., 2020). Other factors which are making drivers drink a lot include Tanzania's greater industrial and traditional alcohol production rates and the presence of low alcohol prices, which make drinking alcohol high or more accessible to drinkers. For instance, industrial liquor costs two thousand Tanzanian shillings (2,000TSH= $0.83) for a bottle of two hundred milliliters with 37 to 40 per cent of alcohol concentration. While for traditional alcoholic beverages example traditional alcoholic beverages of five hundred milliliters (500ml) with alcoholic content between 0.5% to 1.5% costs seven hundred Tanzanian shillings (700TZS =$0.29) to one thousand Tanzanian shillings

(1,000TZS=$0.42). While unstilled spirit (local name called Gongo) for two hundred millilitres (200ml) with an unknown alcoholic percentage is one thousand Tanzanian shillings (1,000TZS=$0.42). Tanzania does not yet have a minimum unit price for alcoholic beverages. Research conducted in England revealed that selling alcohol at a minimum price of 45 pence per unit can lower alcohol consumption and health risks by 3.7%, which is around 45 times more effective than selling alcohol below cost (Brennan *et al*, 2014). However, this is because there are so many uncontrolled alcoholic beverages on the local market, it should be emphasized that just implementing a minimum price of alcoholic beverages will eventually decrease hazardous alcohol use in the Tanzanian population. Kilimanjaro region has a strong alcohol-drinking culture that encourages alcohol use, it's also likely that individuals may drink alcohol because of cultural customs and during socialization practices.

Our study's analysis found an association between alcohol use disorder and factors like culture this finding was similar to research conducted in Nigeria in 2011 (Bello *et al*., 2011). The reason for this could be alcohol is seen as a symbol of celebration in some cultures. Different beverages are defined and the situational appropriateness of different types of alcoholic drinks is understood during social events.

It is learned that wine is the preferred beverage to have with meals, but not spirits or beer; that wine and spirits are suitable for celebrations, but not beer; and that beer is the best beverage for informal, laid-back gatherings. An upbringing environment had an association with alcohol use disorder, comparable to research done in Nigeria in 2011 (Bello *et al*., 2011). Reason children may resort to alcohol as a result of life events like going from middle school to high school, getting dumped, or parents divorced. Also, adolescents are more likely to drink themselves if they are raised in an environment where drinking is encouraged and seen positively by both their parents and classmates. Type of alcoholic beverages associated with alcohol use disorder**,** this finding was comparable to research done in Nigeria in 2011 (Bello *et*

al., 2011). Wine is the most appropriate beverage for casual, laid-back situations, while spirits and beer are suitable for joyous gatherings. You'll discover that wine is the only beverage that should be served with a meal during the celebration**.** Source of alcoholic beverages consumed, linked to alcohol use disorder This finding was similar to research done in Nigeria in 2011 (Bello *et al*., 2011).

Traditional alcoholic beverages' alcoholic content is unknown, therefore consuming both increases the danger of using them in a harmful way. Industrial alcoholic beverages' alcohol level varies and is often expressed as an alcohol percentage by volume. Also, there was a relationship between friend use and alcohol use disorder. The reason many love drinking alcohol to celebrate with friends or in a group is to help them avoid feeling bad and to make them more sociable. Even parent use is associated with alcohol use disorders among drivers similar to the study done in Nigeria in 2011 (Bello *et al*., 2011). Parental alcohol usage and inconsistent parenting styles can lead to inadequate supervision of teenage behaviour or increase the likelihood of unfavourable consequences for their children's health, education, and social interactions. Sibling use showed a link to hazardous use comparable to research done in Nigeria in 2011 (Bello *et al*., 2011).

The reason for this was during their early years, caretakers and others close to them teach individuals about their surroundings. Being a sibling offers a crucial background for the development of interpersonal skills that last a lifetime and apply to relationships outside of one's birth family. Adolescent drug use patterns of younger siblings are uniquely influenced by older siblings. Ready availability revealed an association with hazards similar to a Nigerian study done in 2011 (Bello *et al*., 2011). Due to low pricing and high manufacturing on the market. The history of other drug use associated with hazardous alcohol use is comparable to research done in Nigeria in 2011 (Bello *et al*., 2011). The reason could be best feelings from using it could be one of the reasons. For instance, consuming alcohol can help people relax and

reduce tension. Some consume it to avoid psychological or bodily discomfort also alcohol is widely available and acceptable. While those who begin drinking due to their current partner, curiosity were statistically significantly connected with hazardous users. This finding was comparable to research done in Nigeria in 2011 (Bello *et al*., 2011).

The reason some people enjoy experimenting with various types of alcohol is because they want to feel its effects and have enjoyment. According to this study, drivers who start drinking as a result of stress had a 56% higher prevalence ratio of becoming hazardous to use than those who don't drink as a result of work or family-related stress. Similar to a study done among University students who encounter significant levels of emotional stress are twice as likely to have alcohol use disorder, according to the present study. (Reavley *et al*,. 2011;Sintayehu *et al*,. 2015), and another done in the Philippines in 2020 (CarvalhoPonce, 2019). It is comparable to a study done in Australia year 2011 and in Ethiopia, a cross-sectional research done in 2013**.** The reason is drinking alcohol helps you cope with stress and stressors, but it might make you feel more stressed. Alcohol should be avoided while managing stress since it makes it harder to cope with and resist the need to drink. This might be the reason why people started using alcohol as a means of self-care to deal with their stress, and sadness (Beccaria, 2019). Likewise, this study found an association between drivers who start drinking alcohol due to a history of other drug use and risky behaviors, This was consistent with research done showing that heavy drinkers are more prone to smoke (Drobes, 2002; Victoir, Eertmans, Van Den Bergh, & Van Den Broucke, 2007; White, Johnson, & Buyske, 2000; Hung, Yen, & Wu, 2009).

Another study done among students who frequently chew khat discovered that they had around a three times greater risk of having alcohol use disorder than those who don't consume (Tesfaye *et al*., 2019; Tulu & Keskis, 2015). The reason could be best feelings from using it could be one of the reasons. For instance, consuming alcohol can help people relax and reduce tension. Some consume it to avoid psychological or bodily discomfort; also, alcohol was widely

available and acceptable. According to our findings, drivers who start drinking because of its low price have a 2.06 times greater prevalence ratio of developing alcohol use disorder than those who don't, which was in line with Tanzanian research done in the year 2020.

This suggests that these social determinants have a statistically significant impact on the likelihood of engaging in hazardous alcohol consumption, even though lost statistical significance in the adjusted model ($p > 0.05$). This suggests that these social determinants have a statistically significant impact on the likelihood of engaging in hazardous alcohol consumption, even though lost statistical significance in the adjusted model ($p > 0.05$). This suggests that these factors may have confounding effects that were taken into account in the adjusted analysis, although Stress (PR=1.56; 95%CI,1.05 to 2.32; P=0.03), Source of alcoholic beverage (PR=3.84; 95%CI, 1.37 to 10.72; P=.01), Low price (PR=2.06; 95%CI, 1.09 to 3.88; P=.025) and Siblings (PR=1.66; 95%CI,0.097 to 2.85; P=0.062) all maintained statistical significance.

4.9 Qualitative Discussion

This study revealed the most common factor associated with Alcohol Use Disorder among drivers of public service vehicles in the Kilimanjaro region of Tanzania. These factors are Stress, cheap alcohol, cultural norms, curiosity, parent use, use of other drugs, confidence, financial difficulty, and religion. Peer influence and social norms. Drivers may be influenced by their colleagues or the wider driver community, where heavy drinking or alcohol consumption is normalized. If drivers feel pressure to conform to these social norms, it can increase the likelihood of developing alcohol use disorder. One interviewee talked about. Availability and accessibility of alcohol. If drivers have easy access to alcohol during their breaks or if they work in an environment where alcohol is readily available, it can contribute to problematic drinking patterns. This highlights the importance of regulating alcohol availability and promoting responsible alcohol consumption in public service vehicle settings.

Drivers who face financial difficulties or have limited access to resources and support systems may be more vulnerable to developing alcohol use disorder.

Addressing socioeconomic disparities and providing resources for drivers to access affordable healthcare and support services can help mitigate this risk Job-related stress and pressures can play a significant role. The demanding nature of their work, long hours, and dealing with difficult passengers can lead to increased stress levels. Some drivers may turn to alcohol as a way to cope with these pressures, which can eventually develop into a disorder. Addressing job-related stress and providing support systems for drivers to manage stress effectively is crucial in preventing alcohol use disorder.

While other said upbringing and the environment in which they work all have the potential to have an impact on how many public service vehicle drivers' drink and drive. Low education levels have been associated with a higher risk of alcohol use disorder. A family history of alcoholism can increase the susceptibility to developing alcohol use disorder. This factor may make drivers more vulnerable to problematic drinking patterns. Identifying and addressing these personal factors through appropriate interventions, such as counselling or support groups, can be essential in preventing and treating alcohol use disorder. Culture different cultural norms and attitudes towards alcohol can influence the prevalence of alcohol use disorder. Some cultures may have higher acceptance or tolerance of alcohol consumption, which can contribute to increased risk. Effects of Alcohol Consumption Disorders can be severe and diverse, involving a variety of diseases, death, divorce, engagement in criminal activity, loss of jobs, and alcohol abuse.

Drivers of public service vehicles don't often undergo alcohol testing not be done regularly. In conclusion**,** several factors can contribute to the development of alcohol use disorder among drivers of public service vehicles. These factors include Stress, cheap alcohol, cultural norms, curiosity, parent usage, use of other drugs, confidence, financial difficulty, and religion. By

addressing these factors and implementing appropriate evidence-based interventions, such as; enforcing strong alcohol laws that forbid drinking during work hours and performing routine alcohol testing and effects of alcohol and additional relevant details appear on the labels of alcoholic beverages as well as on billboards to make drivers aware of the risks associated with alcohol use. By doing so we can work towards reducing the prevalence of alcohol-related issues and promoting the well-being of drivers in this population.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary

In this study, the prevalence of alcohol use disorders among drivers of public services vehicles was found to be 63%, and the majority of participants 83.0% confessed to consuming alcohol. These findings suggest that while some demographic factors like age, income, religion, Tribe and employment status initially showed associations with hazardous alcohol use, these associations were attenuated or no longer significant after adjusting for other factors. However, the strong protective association of being self-employed or owning a vehicle persisted even after adjusting for confounding variables. It's vital to remember that these socio-demographic characteristics are possible effects rather than causes of alcohol consumption disorder. The experience of each person varies, and several elements combine to lead to the emergence of alcohol-related problems. To address the specific needs of drivers of public service vehicles, preventative and intervention measures can be more effectively tailored with an understanding of these socio-demographic characteristics.

Associations between alcohol use disorder and social determinants factors such as, friend use, curiosity, parent use, current spouse influence, siblings, other reasons, culture, ready availability, and history of other drug use exhibit significant associations, with hazardous alcohol use in the crude model but lost statistical significance in the adjusted model ($p > 0.05$). This indicates that these factors may have confounding effects that were accounted for in the adjusted analysis. Moreover, Starting alcohol consumption due to low price, stress (work or family-related), and source of alcoholic beverages, showed increased significant risks of developing hazardous alcohol use in both the crude and adjusted models.5.1 Strength and limitation

5.1.1 Strength

Our study had some strengths, mixed method was used for data collection which gave a better understanding of the problem and provided complete evidence

5.1.2 Limitation

This study has some limitations, including Reporting bias, drivers of public vehicles were hesitant to disclose alcohol use disorders for fear of losing their jobs or facing legal repercussions, but this was avoided with adequate informed consent and a proper questionnaire.

5.2. Conclusion

The current study revealed a high prevalence of 63.0% alcohol use disorders among drivers of public service vehicles in Tanzania and sub-Saharan Africa. This indicates a serious public health issue. The experience of each person varies, and several elements combine to lead to the emergence of alcohol-related problems. It's vital to remember that these socio-demographic characteristics such as age, sex, education, marital status and income are possible effects rather than causes of alcohol consumption disorder. A strong protective association of being self-employed or owning a vehicle persisted even after adjusting for confounding variables. To address the specific needs of drivers of public service vehicles, preventative and intervention measures can be more effectively tailored with an understanding of these socio-demographic characteristics. Social determinant factors like low price, stress, siblings, and source of alcoholic beverage were positively associated with hazardous alcohol use among drivers of public service vehicles in the Kilimanjaro region of Tanzania. Other factors that were positively associated with hazardous alcohol use among drivers included, a history of other drug use, friend use, parent use, culture, and readily available. These findings highlight the urgent need for the creation of more efficient preventive initiatives, such as new legislation development, burn advertising, and alcohol promotion. Reduce sales channels, raise prices, and promote health education campaigns to discourage dangerous alcohol consumption among drivers, their

families, and parents. Additionally, strong restrictions on the selling of alcoholic drinks at car/motor parks will also significantly reduce the number of excessive drinking among public transportation drivers.

5.3. Recommendations

The government and relevant parties should put in place extensive education and awareness campaigns that highlight the risks and effects of alcohol use disorder for public transportation drivers. These programs need to emphasize the benefits of drinking in moderation and offer details on available assistance options.

Drivers should get training and assistance from the government and related stakeholders, with an emphasis on stress reduction measures. Including giving drivers access to counselling services, teaching them appropriate coping strategies and time management techniques, and educating them on how to manage the stresses of their jobs.

Peer support can help drivers feel connected to one another, provide a platform for sharing experiences, and offer support for those struggling with alcohol use disorder. Government and relevant stakeholders should establish peer support networks among drivers of public service vehicles to encourage friendship and promote healthy habits.

To prevent drivers from engaging in alcohol use disorder, the government and related stakeholders should enforce strong alcohol laws that forbid drinking during work hours and perform routine alcohol testing. Consistently articulated sanctions for breaking these rules should be in place.

The government and various stakeholders should put into action policies to enhance working conditions, such as ensuring enough rest breaks, establishing fair working hours, and encouraging a healthy work-life balance.

The government and important stakeholders should make sure that drivers have access to private, easily available support services including counselling, addiction treatment programs,

and employee help programs. In order to manage alcohol use disorder, these programs can offer drivers essential resources and assistance.

To encourage a responsible alcohol use culture within the public transportation sector, the government and key stakeholders should work together. This may be accomplished by promoting safe drinking behaviors through awareness campaigns, training programs, and collaborations with relevant stakeholders, such as alcoholic beverage firms.

To address alcohol use disorder among drivers of public service vehicles, the government and pertinent stakeholders should continually monitor and assess the efficacy of the treatments and regulations put in place. This will make it easier to spot problem areas and ensure that initiatives are supported by data and adapted to the particular requirements of drivers.

The government and other stakeholder organizations should ensure that the effects of alcohol and additional relevant details appears on the labels of alcoholic beverages as well as on billboards in order to make drivers aware of the risks associated with alcohol use, to enable effective preventative and safety measures.

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APPENDICES

Appendix I: Consent form

Introduction and research objectives

I am Joseph Bazil Meela, and I am a Mount Kenya University student who is researching **Factors associated with Alcohol Use Disorder among Public Service Vehicle at Moshi bus Terminal in Kilimanjaro Region Tanzania.** This research is for academic purpose.

A request to take part in the study

Because you are the driver of the public transportation vehicle at the Moshi bus terminal, you are requested to take part in this research and also capable of providing the necessary data for this investigation.

Research description

This research intend to assess the prevalence, identify social demographic and evaluate social determinants of alcohol use disorder among drivers of public services vehicles at Moshi bus terminal in Kilimanjaro region Tanzania. This study is targeting to reach 257 drivers at Moshi bus terminal.

Voluntary participation in the study

You have the choice whether to engage in this study freely, and you have the right to revoke your consent at any time.

Possible advantages

Becoming a participant in the study may not directly benefit you, but it will still reveal factors associated with alcohol use disorder among driver of public service vehicle and suggest the essential strategies to fight against and control disease.

Possibility of danger and discomfort

You could feel uncomfortable answering some of the sensitive questions, in which case you may decide not to answer that particular question

Privacy and anonymity

The study's introduction and goal outline how the information gathered will be used. Your name will not be disclosed, the questionnaires will be destroyed, and the audio-recorded data will be removed as soon as the findings have been analyzed, presented, and published.

Contact details

You are welcome to ask me any questions you may have about this study now or at any point in the future. You may reach me at meelajoseph1984@mail.com or by phone at +255 759 66 81 81. Additionally, you can speak with the dean of the school of public health or you can contact the Institutional Ethical Review Committee (IEREC) office at Mount Kenya University, at research@mku.ac.ke if you have any concerns about how this project will protect the privacy of your information or if you feel that you are in risk.

Participant declaration

The researcher has made clear the study's goals, possible advantages, and hazards. I am aware that my participation is entirely voluntary, and I have the right to end it whenever I choose. My concerns about this study have been clarified, and I am aware that any information I provide will be kept confidential. I willingly accept to participate in the research.

Yes No

Researcher's statement

I made the participant aware of the study's objectives.

Individual's thumbprint or signature **Investigator's signature**

…… …….

Date …… Date……..

Date……..

VIAMBATISHO

Kiambatisho I: Fomu ya idhini

Utangulizi na malengo ya utafiti

Mimi ni Joseph Bazil Meela, na ni mwanafunzi wa Chuo Kikuu cha Mlima Kenya ambaye anatafiti Masuala yanayohusiana na Tatizo la Unywaji wa Pombe miongoni mwa Magari ya Watumishi wa Umma katika Kituo cha Mabasi cha Moshi Mkoani Kilimanjaro Tanzania. Utafiti huu ni kwa madhumuni ya kitaaluma.

Ombi la kushiriki katika utafiti

Kwa sababu wewe ni dereva wa usafiri wa umma katika kituo cha basi cha Moshi, unaombwa kushiriki katika utafiti huu na pia una uwezo wa kutoa data muhimu ya utafiti huu.

Maelezo ya utafiti

Utafiti huu unalenga kutathmini kiwango cha maambukizi, kutambua idadi ya watu kijamii na kutathmini viashiria vya kijamii vya ugonjwa wa matumizi ya pombe miongoni mwa madereva wa magari ya huduma ya umma katika kituo cha mabasi cha Moshi mkoani Kilimanjaro, Tanzania. Utafiti huu unalenga kuwafikia madereva 257 katika kituo cha mabasi cha Moshi.

Kuhusika kwa hiari na kuzamishwa kwa sababu ya uchunguzi

Una chaguo la kushiriki katika utafiti huu kwa uhuru, na una haki ya kuondoa kibali chako wakati wowote.

Faida zinazowezekana

Kushiriki katika utafiti kunaweza kusikufaidi moja kwa moja, lakini bado kutafichua mambo yanayohusiana na matatizo ya matumizi ya pombe miongoni mwa madereva wa magari ya umma na kupendekeza mikakati muhimu ya kukabiliana na kudhibiti ugonjwa huo.

Hatari inayowezekana na usumbufu

Unaweza kujisikia vibaya kujibu baadhi ya maswali nyeti, ambapo unaweza kuamua kutojibu swali

Faragha na kutokujulikana

Utangulizi na lengo la utafiti huonyesha jinsi habari iliyokusanywa itatumika. Jina lako halitafichuliwa, hojaji zitaharibiwa, na data iliyorekodiwa sauti itaondolewa mara tu matokeo yatakapochanganuliwa, kuwasilishwa na kuchapishwa.

Maelezo ya mawasiliano

Unakaribishwa kuniuliza maswali yoyote ambayo unaweza kuwa nayo kuhusu utafiti huu sasa au wakati wowote ujao. Unaweza kunifikia kwa **meelajoseph1984@mail.com** au kwa simu kwa **+255 759 668 181.** Zaidi ya hayo, unaweza kuzungumza na mkuu wa shule ya afya ya umma au unaweza kuwasiliana na **Ofisi ya Kamati ya Kitaasisi ya Ukaguzi wa Maadili (IEREC)** katika Mlima Kenya. Chuo Kikuu, katika **research@mku.ac.ke** ikiwa una wasiwasi wowote kuhusu jinsi mradi huu utakavyolinda ufaragha wa maelezo yako au ikiwa unahisi kuwa uko hatarini.

Tangazo la mshiriki

Mtafiti ameweka wazi malengo ya utafiti, faida zinazowezekana, na hatari. Ninafahamu kuwa ushiriki wangu ni wa hiari kabisa, na nina haki ya kuumaliza wakati wowote ninapochagua. Wasiwasi wangu kuhusu utafiti huu umefafanuliwa, na ninafahamu kwamba taarifa yoyote nitakayotoa itawekwa kwa siri. Ninakubali kwa hiari kushiriki katika utafiti.

Ndio Hapana

Kauli ya mtafiti

Nilimfahamisha mshiriki malengo ya utafiti.

Alama ya kidole gumba au saini ya mtu binafsi **Alama ya kidole gumba au Saini ya Mpelelezi**

....

Tarehe..... **Tarehe** ……

Appendix II: Questionnaires

Social Demographics Factors

1. **Jina**/*Name* /***Identification Code*** ……
2. **Jinsi**/*sex* **Me**/*Male* ☐ **Ke**/*Female* ☐
3. **Umri**/*Age* ————————
4. **Hali ya ndoa** /*Marital Status*

Bado ndoa/*Single* **Tengana**/*Separated* **Achana**/*Divorced* ☐

Mjane/*Widowed* **Ndoa**/*married* ☐

5. **Kiwango cha limu**/*Educational level*

   Hakuna shule /*No schooling* **Elimu ya msingi**/*Primary* **Sekondari** /*Secondary*

   Chuo/*College*

6. **Makazi**/*Residence*

   ☐ **Mjini**/*Urban* ☐**Kijijini**/*Rural*

7. **Hali ya Ajira**/*Employment Status*

   ☐**Ajiriwa**/*Employed* ☐ **Mmiliki/Jiajiri**/*Owner/Self employed*

8. **Kabila**/*Tribe (What tribe do you affiliate with?)*

   ☐Chaga ☐Pare ☐Maasai ☐Sambaa ☐Iraq

   ☐Nyaturu ☐Others

9. **Dini**/ *Religion*

   ☐Muslim ☐Christian ☐None ☐Other

10. **Je unatumia pombe?/** *Do you sometimes drink alcohol?*

    Ndio/*Yes* ☐

Hapana/ *No* ☐

If **No** skip the following questions

11. Maswali kuhusu matumizi yako ya vinywaji vyenye kileo kwa mwaka

1. Kwa mwaka uliopita ni mara ngapi unatumia kinywaji kilicho na kilevi? *How often did you consume alcoholic beverages in the past year?*	[0] Hakuna *Never*	[1] Kila mwezi au chini ya mwezi *Monthly or less*	[2] Mara 2 hadi 4 /Mwezi *2-4 times/month*	[3] Mara 2 hadi 3 /wiki *2-3 times /week*	[4] 4 au Zaidi/ wiki *4 or more times/ week*	**SCORE**
2. **Kwa mwaka uliopita kwa siku ya kawaida unatumia vinywaji vingapi vyenye kilevi unapokuwa unakunywa?** *How many alcoholic beverages did you consume on an average day last year when you were drinking?*	[0] 1 au 2	[1] 3 au 4	[2] 5 au 6	[3] 7 au 9	[4] 10 au zaidi	
3. **Kwa mwaka uliopita ni mara ngapi unatumia vinywaji sita au Zaidi kwa mara moja kwa mwaka uliopita?** *How often during the last year do you have six or more drinks on one occasion?*	[0] haijawahi kutokea Never	[1] Chini ya kila Mwezi Less than a month	[2] Kila mwezi Monthly	[3] Kwa wiki Weekly	[4] Kila siku au karibu kila siku Daily/almost daily	
4. **Mara ngapi katika mwaka uliopita uligundua hukuweza**	[0] haijawa	[1]	[2] Kila mwezi	[3] Kwa wiki	[4]	

	kuacha kunywa mara ukishaanza? *How frequently did you discover that after you started drinking in the past year, you couldn't stop?*	hi kutokea Never	Chini ya kila Mwezi Less than a month	Monthly	Weekly	Kila siku au karibu kila siku Daily/almost daily	
5.	**Mara ngapi katika mwaka uliopita ulishidwa kufanya unavyotarajiw kutoka kwako kwa sababu ya kunywa?** *How frequently did you fail to perform duties that were typically expected of you over the past year due to drinking?*	[0] haijawa hi kutokea Never	[1] Chini ya kila Mwezi Less than a month	[2]Kila mwezi Monthly	[3] Kwa wiki Weekly	[4] Kila siku au karibu kila siku Daily/almost daily	
6.	**Mara ngapi katika mwaka uliopita ulihitaji kinywaji cha kwanza asubuhi ili kuweza kuendelea na shughuli zako baada ya kunywa sana**? *How often during the last year you had a feeling of having one drink in morning after morse drinking*	[0] haijawa hi kutokea *Never*	[1] Chini ya kila Mwezi *Less than a month*	[2] Kila mwezi *Monthly*	[3] Kwa wiki Weekly	[4] Kila siku au karibu kila siku *Daily/almost daily*	
7.	**Mara ngapi katika mwaka uliopita ulijihisi kuwa na hatia au**	[0] haijawa hi kutokea	[1] Chini ya kila Mwezi	[2] Kila mwezi *Monthly*	[3] Kwa wiki *Weekly*	[4] Kila siku au karibu kila siku	

kujilaumu baada ya kunywa? *How often during the last year have you had a feeling of guilt or remorse after drinking*	*Never*	*Less than a month*			*Daily/almost daily*	
8. **Mara ngapi katika mwaka uliopita hukuweza kukumbuka kilichotendeka usiku uliopita kwa sababu ulikunywa?** How frequently in the last year did your drinking prevent you from remembering what happened the night before?	[0] haijawahi kutokea *Never*	[1] Chini ya kila Mwezi *Less than a month*	[2] Kila mwezi *Monthly*	[3] Kwa wiki *Weekly*	[4] Kila siku au karibu kila siku *Daily/almost daily*	
9. Je, umejeruhiwa au mtu mwingine kujeruhiwa kwa sababu ya kunywa kwako? *Have you or someone else been injured because of your drinking?*	[0] Hapana *No*	[2] Ndiyo, lakini si kwa mwaka uliopita *Yes, but not in the last year*	[4] Ndiyo kwa mwaka uliopita *Yes, during the last year*			

10. Je, ndugu yako au rafiki yako au daktari au mhudumu wa afya mwingine amuguswa na kunywa kwako au kupendekeza upunguze kunywa kwako? *Has a close friend, family member, doctor, or other healthcare professional expressed worry about your drinking or recommended that you reduce?*	[0]Hapana *No*	[2] Ndiyo, lakini si kwa mwaka uliopita *True, but not in the previous year.*	[4]Ndiyo kwa mwaka uliopita *Yes, during the last year*			
TOTAL SCORE						

Is the AUDIT score > or =8 today?	**Yes**	**No**

Social determinant questions

11. Why did you start consuming alcohol? /***Je kwanini umeanza kutumia pombe?***

a. Because of Friend use / ***Je kwasababu ya matumizi ya maarafiki?***

☐ Yes/***Ndio***

☐ No ***/Hapana***

b. Because of Parents use /***Je kwasababu ya matumizi ya wazazi?***

☐ Yes/***Ndio***

☐ No/***Hapana***

c. Because of Ready available/***Je kwasababu tayari inapatikana?***

☐ Yes /***Ndio***

☐ No/***Hapana***

d. Upbringing environment/ ***Je kwasababu ya mazingira ya malezi?***

▭Yes /***Ndio***

▭No ***/Hapana***

e. Because of history of other drugs/***Je sababu ya historia ya matumizi ya dawa nyingine?***

▭Yes /***Ndio***

▭ No/***Hapana***

f. Because of Low price/ ***Je kwasababu ya bei ya chini?***

▭Yes ***/Ndio***

▭No /***Hapana***

g. Because of Curiosity/ ***Je kwasababu ya udadisi?***

▭Yes/***Ndio***

▭No/***Hapana***

h. Because of Siblings use/ ***Je kwasababu ya ndugu?***

▭Yes/***Ndio***

▭No /***Hapana***

i. Because of Stress (work or family related)/***Je kwasababu ya mafadhaiko yanayo husiana na kazi au familia?***

▭Yes/***Ndio***

▭No/***Hapana***

j. Because of current spouse ***Je kwasababu ya mpenzi wako?***

Yes/***Ndio***

No/***hapana***

k. Because of culture/ **Je kwasababu ya utamaduni?**

Yes/***Ndio***

No/***Hapana***

l. Other reasons /***Je una sababu nyingine?***

▭Yes /***Ndio***

▭No/***Hapana***

m. Source of alcohol beverage used /***Je chanzo cha pombe unayo tumia ni?***

▭Shop/***Duka***

▭Bar/***Baa***

▭Bar and shop/***Baa na Duka***

n. Type of alcoholic beverage consumed/***Je ipi aina ya pombe inayotumia?***

- ▭Beer/***Bia***
- ▭Wine/***Mvinyo***
- ▭Traditional***/Jadi***
- ▭Distilled spirts/liquor/***Pombe iliyo safishwa***
- ▭Beer and wine/***Bia na mvinyo***
- ▭Wine and traditional/***Jadi na mvinyo***
- ▭Distilled spirit and traditional/***Pombe iliyo safishwa na jadi***
- ▭Beer and distilled spirit/***Bia na pombe iliyosafishwa***
- ▭Wine and Distilled spirit/***Mvinyo na pombe iliyo safishwa***
- ▭Beer and traditional /***Bia na jadi***

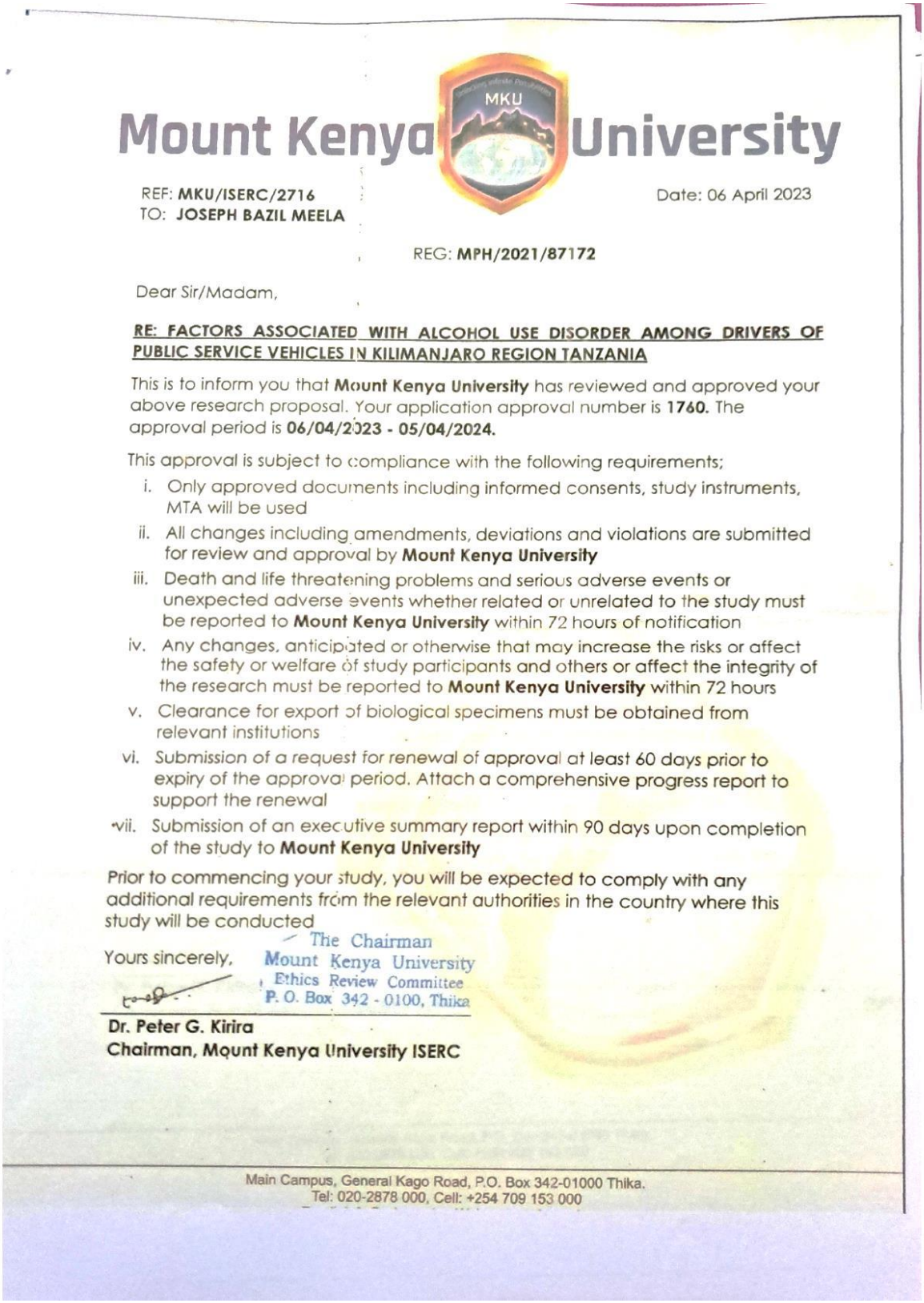
Beer, traditional, distilled spirit, wine

Beer, traditional and distilled spirit

Appendix III: Key Informant Interview

1) What is alcohol use disorder? ***Je ulevi ni nini au urahibu wa pombe?***
2) What are the causes of alcohol disorder? ***Je nini husababisha ulevi au urahibu wa pombe?***
3) Is alcohol use disorder a problem among public services vehicle drivers here in Moshi Kilimanjaro? ***Je ulevi au urahibu wa pombe ni tatizo kwa madereva wa mabas madogo hapa moshi kilimanjaro?***
4) Why public services vehicle driver drink and drive? ***Je kwanini madereva wa mabasi madogo wanatumia pombe na kuendesha mabasi madogo?***
5) What are the effect of alcohol use disorder? ***Je nini au yapi madhara ya ulevi/urahibu wa pombe?***
6) Do you regularly test alcohol use among driver of public service vehicle? ***Je hua una wapima madereva wa mabasi madogo unywaji wa pombe?***
7) Have you ever caught a public service vehicle driver drunk drive? ***Je mmewahi kumkamata dereva wa mabasi madogo akiendesha akiwa mlevi?***
8) Have you ever had a case of accident due to alcohol use? ***Je mmewahi kupata ajali iliyo sababishwa na unywaji wa pombe?***
9) How do you deal with such a driver? ***Je mnakabilia na vipi na dereva wa namna hii?***

Appendix IV: Attached are Ethical Clearance Certificate and other approvals obtained before data collection



Mount Kenya University

REF: **MKU/ISERC/2716**
TO: **JOSEPH BAZIL MEELA**

Date: 06 April 2023

REG: **MPH/2021/87172**

Dear Sir/Madam,

RE: FACTORS ASSOCIATED WITH ALCOHOL USE DISORDER AMONG DRIVERS OF PUBLIC SERVICE VEHICLES IN KILIMANJARO REGION TANZANIA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1760.** The approval period is **06/04/2023 - 05/04/2024.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to comply with any additional requirements from the relevant authorities in the country where this study will be conducted

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Dr. Peter G. Kirira
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: 020-2878 000, Cell: +254 709 153 000

Kibong'oto Infectious Diseases Hospital- Nelson Mandela African Institution of Science and Technology- Centre for Educational Development in Health, Arusha (KIDH-NM-AIST-CEDHA) -KNCHREC

RESEARCH ETHICAL CLEARANCE CERTIFICATE

Research Proposal No: KNCHREC00001/05/2023 **12th May 2023**

Study Title: Factors associated with alcohol use disorder among drivers of public service vehicles in Kilimanjaro region Tanzania

Study Area: Tanzania in Kilimanjaro region

PI Name: **JOSEPH BAZIL MEELA**
Co-Investigator: NONE
Institutions: Mount Kenya University, Kenya

This is to certify that the research entitled: **Factors associated with alcohol use disorder among drivers of public service vehicles in Kilimanjaro region Tanzania** has been granted ethical clearance on the date mentioned above.

1. Subject to this approval you will be required to submit your progress report to the KNCHREC, National Institute for Medical Research, and Ministry of Health.
2. Publication of your findings is subject to presentation to the KNCREC and NIMR for approval
3. Copies of final publications should be made available to KNCHREC, NationalInstitute of Research and Ministry of Health

Duration of Study Renewal: Subject to Renewal within ONE YEAR
Span From: 12th May 2023 to 11th May 2024.

.....
Dr. Emmanuel A Mpolya
Interim Secretary
KNCHREC

.....
Prof. Raymond Mosha
Interim Chairperson
KNCHREC

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA KILIMANJARO
Anwani ya Simu:'REGCOM'KILIMANJARO
Simu Na. Moshi +255 (027) 2754236/7,
Nukushi Na. +255 (027) 2752184
Barua Pepe : ras@kilimanjaro.go.tz
ras.kilimanjaro@tamisemi.go.tz
Unapojibu tafadhali taja:

Ofisi ya Mkuu wa Mkoa,
17 Barabara ya Florida,
S.L.P 3070,
25107 - MOSHI

Kumb. Na. DC.109/228/01'H'/4 17 Mei, 2023

Mkurugenzi wa Manispaa,
S.L.P 318
MOSHI;

Yah: **KIBALI CHA KUFANYA UTAFITI UNAOTATHMINI SABABU NA MATUMIZI YA POMBE KWA MADEREVA WA VYOMBO VYA USAFIRI VYA UMMA**

Tafadhali husika na somo tajwa hapo juu.

2. Ndugu Joseph Bazil Meela ni mwanafunzi katika chuo cha Mount Kenya na pia ni mwajiriwa wa Wizara ya Afya akihudumu kama mkufunzi katika Chuo Kikuu Cha Afya na Sayansi Shirikishi Muhimbili. Amepata kibali cha kufanya utafiti ikiwa ni sehemu ya matakwa ya chuo kwaajili ya kuhitimu shahada ya uzamili (MSc Epidemiology and Disseases Control).

3. Utafiti wake unalenga kuangalia vichocheo vinavyochangia matumizi ya pombe kwa madereva wa vyombo vya usafiri vya umma. "***Factors associated with alcohol use disorder among drivers of public service vehicles at Moshi bus terminal in Kilimanjaro region.***

4. Utafiti umepata ithibaki kutoka kamati ya maadili ya chuo cha Mount Kenya na kwa hapa nchini kutoka kamati ya maadili ya Kibong'oto-Nelson Mandela Institute of Science and technology-Center of education development in Health Arusha (KNCHREC)

5. Kwa barua hii, nautambulisha utafiti huu kwako kwa ajili ya kutoa ushirikiano stahiki.

6. Ninawashukuru kwa ushirikiano.

Dkt. Andrewleon S. Quaker
Kny:- **KATIBU TAWALA MKOA**

Nakala: Katibu Tawala Mkoa - (aione kwenye faili)

Joseph B Meela
Chuo Kikuu Cha Afya na Sayansi Shirikishi Muhimbili
S.L.P. 65005
DAR ES SLAAM

JAMHURI YA MUUNGANO WA TANZANIA

OFISI YA RAIS TAWALA ZA MIKOA NA SERIKALI ZA MITAA (TAMISEMI)

HALMASHAURI YA MANISPAA YA MOSHI

Unapojibu tafadhali taja:

Kumb. Na. A.40/13/1/VOL.32/182 Tarehe: 30/05/2023

Bw. Joseph Bazil Meela
Mwanafunzi,
Chuo Kikuu cha cha Afya na Sayansi Shirikishi Muhimbili,
DAR ES SALAAM

Yah: KIBALI CHA KUFANYA UTAFITI

Tafadhali rejea barua ya Katibu Tawala (M) yenye Kumb.Na. DC.109/228/01'H'/4 tarehe 17, Mei, 2023 ikielekeza mada tajwa hapo juu.

2. Kwa barua hii namtambulisha kwako **Ndugu Joseph Bazil Meela** kutoka Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili ambaye amepata kibali cha kufanya utafiti katika mada ya "***Factor Associated with Alcohol use disorder among drivers of public service vehicles at Moshi Bus Terminal in Kilimanjaro Region .***

3. Nawatakia kazi njema.

Yeniel Kagonji
Kny. **MKURUGENZI**
FOR: MUNICIPAL DIRECTOR
MOSHI

Nakala: Katibu Tawala (M) Kilimanjaro,
S.L.P 3070,
MOSHI.

: Mkuu wa Divisheni ya Huduma za Afya
Ustawi wa Jamii na Lishe
MOSHI

Appendix V: Similarity Index

FACTORS ASSOCIATED WITH ALCOHOL USE DISORDER AMONG DRIVERS OF PUBLIC SERVICE VEHICLES IN KILIMANJARO REGION TANZANIA

by JOSEPH BAZIL MEELA

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FACTORS ASSOCIATED WITH ALCOHOL USE DISORDER AMONG DRIVERS OF PUBLIC SERVICE VEHICLES IN KILIMANJARO REGION TANZANIA

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