PREVALENCE AND CORRELATES OF ALCOHOL USE AMONG UNDERAGE HIGH-SCHOOL STUDENTS IN MURANG'A AND KAJIADO COUNTIES, KENYA

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Prevalence and correlates of alcohol use among underage high-school students in Murang'a and Kajiado Counties, Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Signature ……Date…….

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This thesis has been submitted for examination with our approval as University supervisors

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DEDICATION

This thesis is dedicated to two great men who have shaped my life and defined who I am today. First to my late dad, Pascal Okwarah, my first teacher in life; from whom I learnt the virtues of hard work, self-discipline and determination as well as my former high school Principal, Mr Dennis Awunya who believed that I would someday become somebody and offered me a chance to pursue my high-school education and kept me in school for 4 years even when I could not afford to pay the school fees.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired immune-deficiency syndrome
BAC	Blood alcohol concentration
CDC	Centres for Disease Control and Prevention
COHES	College of Health Sciences
DALYs	Disability adjusted life years
FAS	Fetal alcohol syndrome
GSHS	Global School Based Health Survey
HIV	Human immunodeficiency virus
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KEMRI	Kenya Medical Research Institute
KU	Kenyatta University
NACADA	National Authority for the Campaign against Alcohol and Drug Abuse
NACOSTI	National Commission for Science and Technology and Innovation
PPS	Probability proportional to size
STD	Sexually transmitted diseases
SPSS	Statistical package for social sciences
UNODC	United Nations Office on Drugs and Crime
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNESCO	United Nations Educational, Scientific and Cultural organization
UNICEF	United Nations Children's Emergency Fund
WHO	World Health Organization

DEFINITION OF OPERATIONAL TERMS

Binge drinking: According to the National Institute on Alcohol Abuse and Alcoholism, binge drinking is a pattern of drinking that brings a person's blood alcohol concentration (BAC) to 0.08 grams percent or above. This happens when men consume 5 or more drinks, and when women consume 4 or more drinks, in about 2 hours

Current drinking: This is drinking of alcohol by the study participants being reported within the past 30 days of the study.

Hazardous drinking: A pattern of alcohol consumption that places patients at risk for adverse health events.

Individual level factors: personal history and biological factors influence how individuals behave and increase their likelihood of indulgence in substance abuse. Among these factors are being a victim of child maltreatment, psychological or personality disorders, sexual indulgence tobacco and/or other substance abuse among others

Institutional Level factors: Factors beyond the individual and most often governed by societal or community forces within which social relationships occur including, parental, family, school or neighborhood experiences of peer pressure, easy availability

Probability proportional to size (PPS) sampling: Is a method of sampling from a finite population in which a size measure is available for each population unit before sampling and where the probability of selecting a unit is proportional to its size (Skinner, 2014).

Standard Drink: A standard drink is any drink that contains about 14 grams of pure alcohol (about 0.6 fluid ounces or 1.2 tablespoons).

Underage: This is a group who according to the Alcoholic Drinks Control Act, 2010, are regarded as minors and below the age of 18 years who legally are not permitted to buy or drink alcoholic beverages.

ABSTRACT

Alcohol use is an important risk factor for morbidity, mortality, social and educational damages among the young people. There is a paucity of data on alcohol use among underage high school students in Kenya. The aim of this study was to determine the prevalence and correlates of alcohol use among underage high-school students in Murang'a and Kajiado Counties. A descriptive cross-sectional survey involving the modified Global School-based Health Survey questionnaire and in-depth key informant interviews were adopted. The questionnaire consisted of seven parts: socio-demographic characteristics, alcohol use patterns, tobacco & marijuana use, sexual behaviour, psychosocial as well as parental and community factors. Twenty key-informant interviews involving 9 head-teachers, 7 guiding and counselling teachers and 4 school captains were done. A representative sample of 938 respondents (61.9% males and 38.1% females) between 13 and 17 years of age selected by probability proportional to size technique from 10 and 21 secondary schools in Kajiado and Murang'a respectively was used. Descriptive statistics such as mean, standard deviations and proportions were used as first-line exploratory analytic methods. A multivariable logistic regression was used to establish correlates of alcohol use. The prevalence of current use of alcohol was estimated at 37% (38% for Murang'a and 36% for Kajiado). The mean age of onset of drinking was 12.3 years ±s.d. 3.14. Overall, individual-level factors associated with current use of alcohol included: male gender (adjusted odds ratio [AOR]: = 1.7; 95% CI: 1.0-2.7,), cigarette

use (AOR=4.3; 95% CI: 2.0-9.8) and missing school (AOR =3.2; 95% CI:1.8- 8.2). At the institutional level, students who found it easier to get an adult to buy alcohol on their behalf were 2.1 times more likely to use alcohol in Murang'a compared to Kajiado. The study concludes that there is a fairly high prevalence of alcohol use among the underage in the study areas associated with both individual and institutional-level factors. This study recommends sensitization programs for students on risk-reduction strategies involving alcohol use with a key focus on primary prevention. Moreover, substance abuse preventive programs should take into account other risky behaviours such as cigarette and marijuana use and sexual behaviour while paying particular attention to male gender.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Teenage is regarded an important period for laying the foundations of good health in adulthood. Unfortunately, many health-related behaviours and conditions that underlie the major non-communicable diseases start or are reinforced during this period of life. They include: alcohol and tobacco use, diet and exercise patterns, overweight and obesity. These behaviours and conditions have a serious impact on the health and development of adolescents today and by extension a devastating effect on their health as adults of tomorrow (Dick & Ferguson, 2015; WHO, 2014b).

According to the WHO Health for the World's Adolescents report (2014) an estimated 1.3 million deaths occurred in 2012, most of them from causes that could have been prevented or treated. Mortality was higher in boys than in girls and in older adolescents (15–19 years) than in the younger group (10–14 years) (WHO, 2014b).

The use of alcohol during adolescence remains an issue of particular concern for policy makers the world over. Worldwide, monthly heavy episodic drinking is slightly more prevalent among young people aged 15–19 years (11.7%) than among the total population aged 15 years and older (7.5%) (WHO, 2014a). Yet there is considerable evidence showing that the use of alcohol during adolescence greatly increases the vulnerability to alcohol use disorders and other risky behaviours in later years (DeWit, Adlaf, Offord, & Ogborne, 2000; Livingston, 2008; McCambridge, McAlaney, & Rowe, 2011; Nixon & McClain, 2010).

Youth who drink have higher odds of encountering a myriad of problems in school including higher absence and poor academic grades, social problems, such as fighting and lack of participation in youth activities. Others present with physical problems like hangovers, unwanted, unplanned, and unprotected sexual activity, higher risk for suicide and homicide as well as abuse of other drugs. The risk of

youth experiencing these problems is greater for those who binge drink than for those who do not (Crego et al., 2010; Miller, Naimi, Brewer, & Jones, 2007; Patrick et al., 2013). Health problems associated with alcohol abuse arise in the form of acute and chronic conditions, and adverse social consequences.

The WHO estimates that 2.5 billion people consume alcohol in the world and 76 million of these suffer from alcohol use disorders such as dependence and abuse. Alcohol causes 3.3 million deaths (5.9% of total) and a loss of 139 million (5.1% of total) of Disability-Adjusted Life Years (DALY) (WHO, 2014a). This is greater than, for example, the proportion of deaths from HIV/AIDS (2.8%), violence (0.9%) or tuberculosis (1.7%). Moreover, the abuse of alcohol is a causal factor in more than 200 health conditions, including incidences and clinical outcomes of infectious diseases such as tuberculosis, HIV/AIDS and pneumonia (Rehm et al., 2010; WHO, 2014a).

In Kenya, alcohol use and abuse points to an increasing trend that has permeated all sectors of the society. The consequences of alcohol use spans the social and economic scenes with common and easily identifiable manifestations in public health (Mwenesi, 1996). National findings indicate that 13.6% of the Kenyan population aged 15-65 currently consume alcohol and the abuse of alcohol is prevalent in nearly all the Provinces (NACADA, 2012). Another study involving high-school students in Nairobi revealed that 83.2% of the respondents reported that it was possible for students to abuse drugs without the teachers' knowledge. Alcohol was ranked as the most commonly abused drug in schools reported by 74.4% of the students interviewed (NACADA, 2010b).

Factors associated with alcohol use among adolescents in other countries are well documented. They include: other substance use (Birhanu, Bisetegn, & Woldeyohannes, 2014; Saban & Flisher, 2010; Siziya, Rudatsikira, & Muula, 2009), other health risk behaviour including physical fighting, being bullied and sexual activity (Assanangkornchai, Mukthong, & Intanont, 2009; Chaveepojnkamjorn & Pichainarong, 2011; Siziya et al., 2009), lack of school attendance (Alwan, Viswanathan, Rousson, Paccaud, & Bovet, 2011; Siziya et al., 2009), psychosocial

distress in the form of anxiety, depression and suicidal behaviour (Assanangkornchai et al., 2009; Chaveepojnkamjorn & Pichainarong, 2011; Peltzer, 2009; Saban & Flisher, 2010; Siziya et al., 2009) , adverse childhood events (Kabiru, Beguy, Crichton, & Ezeh, 2010), family members with alcohol problems (Birhanu et al., 2014; Chaveepojnkamjorn & Pichainarong, 2007, 2009) , peers drinking alcohol (Chaveepojnkamjorn & Pichainarong, 2007) , lack of protective factors such as parental supervision (Alwan et al., 2011; Peltzer, 2009; Siziya et al., 2009) , alcohol expectancies (Schulte, Ramo, & Brown, 2009) , personality characteristics (Schulte et al., 2009), male gender (Assanangkornchai, Sam-Angsri, Rerngpongpan, & Lertnakorn, 2010; Birhanu et al., 2014; Pichainarong & Chaveepojnkamjorn, 2010), educational level (Chaveepojnkamjorn & Pichainarong, 2009; Pichainarong & Chaveepojnkamjorn, 2010) , older age (Alwan et al., 2011) and grade point average (Chaveepojnkamjorn & Pichainarong, 2009).

There is a paucity of data on the prevalence and factors associated with alcohol use among underage youths in Kenya. In order to inform the design and implementation of public health interventions linked to existing laws, including the Alcoholic drinks control act 2010, there is need for identification of factors associated with underage alcohol use.

1.2 Statement of the Problem

Adolescence is a time of transitions and experimentation, sometimes including experimentation with alcohol and other drugs (Staff et al., 2010). Unfortunately, many health-related behaviours and conditions that underlie the major non-communicable diseases start or are reinforced during this period of life (WHO, 2014b). If left unchecked, the said behaviours have ugly ramifications on the health and development of the underage and by extension on their health as adults of tomorrow. Underage drinking in Kenya has in the recent past become an issue of public health and policy concern with half of drug abusers estimated to be aged between 10-19 years (United Nations Office on Drugs and Crime(UNODC), 2004). The median age of use of packaged alcohol is now estimated at 11 years (NACADA,

2012). In Kajiado North District, 21.1% of students aged 14-17 have taken alcohol in their life-time with the highest prevalence rates (21.1%) occurring among male students (Michuki, 2014). Previous studies done in Central Kenya by NACADA show that Murang'a County had the highest overall prevalence rates of current alcohol use (25.5%). It also had the highest prevalence of current drinking among males at 49.4% (NACADA, 2010a). Maithya (2009) observes that unless something is urgently done, alcohol and drug abuse will continue to lead many young people into a downward spiral of hopelessness and fatalities.

1.3 Justification

Despite the existence of minimum legal drinking age laws, available evidence and actual drinking patterns in Kenya suggest that a majority of young people start using alcohol before reaching the legal drinking age of 18 (Maithya, 2009; Michuki, 2014; NACADA, 2010b). This, despite well-established evidence that early alcohol use may have long-lasting consequences. Studies have shown that youths who begin drinking before their fifteenth birthday are four times more likely to develop alcohol dependence at some time in their lives as compared to those who delay their first drink to at least age 20 (Hanson, Medina, Padula, Tapert, & Brown, 2011; Hingson, Heeren, & Edwards, 2008; Zucker, Donovan, Masten, Mattson, & Moss, 2008). Early brain exposure to alcohol has been shown to interrupt key learning processes, hence affecting academic and occupational achievement (Nixon & McClain, 2010; Spear, 2002). Alcohol use is also known to contribute to depression, stress, suicide (Garlow, 2002) and high-risk sex during adolescence (Grunbaum et al., 2002). Moreover, alcohol-attributable mortality among the young people outweighs those from all illegal drugs combined (Garlow, 2002; Hingson, Zha, & Weitzman, 2009; Spear, 2002). In Kenya, data on the prevalence and correlates of underage drinking is scanty and widely underestimated. However, the proximity of adolescence to biological maturity and adulthood provides an ideal opportunity for research aimed at informing drug preventive activities among the underage (Obot & Saxena, 2005; Zucker, Donovan, Masten, Mattson, & Moss, 2009). An understanding of factors

associated with underage drinking from both an individual and institutional-level perspective is key in order to inform policy necessary to avert underage drinking in Kenya.

1.4 Research Questions

1) What is the prevalence of alcohol use among underage high-school students in Murang'a and Kajiado Counties?
2) What are the individual level-factors associated with alcohol use among underage high school students in Murang'a and Kajiado counties?
3) What are the institutional-level factors associated with alcohol use among underage high school students in Murang'a and Kajiado counties?

1.5 Objectives

1.5.1 Broad Objective

To determine the prevalence and factors associated with alcohol use among underage high-school students in Murang'a and Kajiado Counties in Kenya.

1.5.2 Specific Objectives

1) To determine the prevalence of alcohol use among underage high school students in Murang'a and Kajiado Counties.
2) To determine individual-level factors associated with alcohol use among underage high-school students in Murang'a and Kajiado Counties.
3) To determine institutional-level factors associated with alcohol use among underage high school students in Murang'a and Kajiado Counties

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Since its discovery and the beginning of its use by mankind, alcohol has had a dual effect to humans. Whereas alcoholic beverages have played a key role in important social occasions including, births, marriages, funerals and even religious ceremonies it has also created serious problems to humans in equal measures (Maisto, Galizio, & Connors, 2011). Although alcohol use is deeply embedded in many societies and its use is controlled, recent years have seen changes in drinking patterns across the globe. Notably, rates of consumption and patterns, drinking to excess among the general population and heavy episodic drinking among young people have been on the rise in many countries and in different contexts.

According to the WHO Global status report on alcohol and health (WHO, 2014a), worldwide consumption of alcohol in 2010 was equal to 6.2 litres of pure alcohol consumed per person aged 15 years or older, which translates into 13.5 grams of pure alcohol per day. In Kenya, the per capita consumption of alcoholic beverage in 2005 was 4.1 inclusive of 2.5 unrecorded alcohol–illicit alcohol (WHO, 2011). The harmful use of alcohol has become one of the most important risks to health among the young people globally. It is the leading risk factor in low-resource settings with low mortality rates but ranks third in western countries (Thoa, Hoang, Vung, Tien, & Plant, 2013)

Although adolescence is a wonderful time often characterised by physical and emotional growth, for some young people, adolescence often takes a dark turn, especially when alcohol use is involved. Health problems associated with alcohol consumption among adolescents are dire (Thoa et al., 2013). Alcohol use contributes to a wide range of diseases, health conditions and high-risk behaviours, from mental disorders and road traffic injuries, to liver diseases and unsafe sexual behaviour.

Globally, 320 000 young people aged 15-29 years die annually, from alcohol-related causes, resulting in 9% of all deaths in that age group (WHO, 2011).

2.2 Efforts in the fight against alcohol in Kenya

In a bid to respond to the negative ramifications posed by alcohol, the government of Kenya has in the past enacted various legislation the first of which dates back to the colonial era. More recently in August 2010, the government enacted the 'Alcoholic Drinks Control Act 2010, dubbed 'The Mututho Act', after its sponsor in parliament. This Act was expected to among other things avert underage drinking. This in most jurisdictions is effected by checking availability, that is, the degree of effort required to obtain alcohol, as determined by geographic, economic, and social factors (D'Amico et al., 2002; Komro & Toomey, 2002). Consequently, it is expected that meaningful interventions aimed at the underage be supplemented by relevant research that looks at predictors to underage drinking. This will lead to targeted interventions that will help reduce youth access to alcohol and decrease the harmful consequences of drinking (Komro & Toomey, 2002).

2.3 Alcohol use and underage mortality

Underage alcohol use can have far reaching consequences. Past studies have particularly shown hazardous and harmful drinking patterns among adolescents, including earlier onset of alcohol consumption, drunkenness and binge drinking (Kraus, Metzner, & Piontek, 2010; Lancet, 2008). It is also possible that as the Blood Alcohol Concentration (BACs) rises, alcohol overdose can occur, resulting in respiration failure, suffocation, coma, and in some cases, death. Alcohol intoxication produces diminished inhibition, increased violent behaviour and poor judgment. All these factors contribute to young deaths and injuries due to alcohol-related aggressive behaviour. Homicide is the second leading cause for mortality among those aged 10-20 years and is followed by suicide with approximately 28 per cent of suicide attempts of those aged 9-15 years old being directly attributed to alcohol use (Preuss et al., 2002; Rehm et al., 2010).

2.4 Underage alcohol use and association with other drug use

There is increased evidence that young people under the influence of alcohol are at an increased risk of indulgence in other drugs (Brown, Tapert, Tate, & Abrantes, 2000). Alcohol is often considered a gateway to the use of illegal substances. Youth who drink are significantly more likely to use other illicit drugs, compared to young non-drinkers (Patrick, Schulenberg, O'malley, Johnston, & Bachman, 2011). It is possible for a young person to use an illicit substance after drinking because judgment is impaired. While in this state, exposure to other substances is more likely and susceptibility to peer influences is often amplified. Once alcohol use has been initiated, the use of other intoxicants may no longer appear as risky to the underage.

2.5 Underage alcohol use and state of physical health

Past studies have shown that the acute effects of alcohol use in adolescents are similar to those experienced by adults. However, youth experience less of the sedating effects (Silveri & Spear, 2002) and more memory impairment effects than adults (White, Ghia, Levin, & Swartzwelder, 2000). Adolescents are also at a greater risk for continuing risky behaviour (such as drink driving, riding with drunk drivers, engaging in risky sexual behavior, or participating in other physical activities that result in physical injury) during an episode of drinking (Bonomo et al., 2001; WHO, 2011) and incurring a blackout and forgetting the events of an alcohol filled evening (White, 2003). It is also known that chronic health problems that are commonly observed in adults with alcohol dependence are seldom seen in adolescents, including gastritis, pancreatitis, hepatitis, liver cirrhosis, hypertension, heart problems anaemia and malnutrition (Chartier, Hesselbrock, & Hesselbrock, 2011; Zagrosek A, Messroghli D, Schulz O, Dietz R, & Schulz-Menger J, 2010). Adolescents who drink heavily are however at risk for identifiable health problems, with young females being at a particularly greater risk of incurring more severe physical consequences (Zagrosek A et al., 2010). In one of the few studies of youth using both physical exams and biological measures, Clark, Lynch, Donovan, and

Block (2001) reported that adolescents with alcohol use disorders had more problems identified on their physical exams. Oral and sleep problems in particular were linked to alcohol involvement as well as more health problems and negative affect. Furthermore, alcohol use in adolescence has been linked to dysphasia and poorer physical health during adolescence and young adulthood (Hanson et al., 2011; Zagrosek A et al., 2010).

2.6 Underage and Risky sexual behaviour

The problems of underage drinking and risky sexual behaviour are well documented. According to a study by the Youth Risk Behavior (Grunbaum et al., 2002), frequent heavy drinkers were more likely to engage in sexual intercourse before age 13 as well as sex with at least three partners in the past month. Moreover, frequent heavy drinkers were more likely than non-drinkers to have used alcohol or drugs prior to their most recent sexual activity. Many who engaged in sexual activity while drinking reported having unprotected sex. Nearly 30 percent of 15-17 year-olds and 37 percent of 18-24 year-olds say they drink even though they know they may have sex when they are intoxicated and would not when sober (National Research Council (US) and Institute of Medicine (US) Committee on Developing a Strategy to Reduce and Prevent Underage Drinking, 2004). In yet another study by Bobbin and Kenkel (2004) 31 percent of youth who engaged in frequent heavy drinking reported having at least six different partners, compared with only 4 percent of youth who did not drink.

Youth and young adults who begin drinking early are also more likely to have unplanned and unprotected sex (Bobbin & Kenkel, 2004) which sometimes results in unwanted pregnancies. Youth who drink alcohol while pregnant face the risk of delivering babies with FAS disorders. Children born with FAS disorders often experience developmental delays and have other birth defects, including abnormal facial features, growth deficiencies, and central nervous system problems (Williams & Smith, 2015). Underage drinking is considered a major contributor to the

prevalence of sexually transmitted infections given that those who engage in sexual activity after consuming alcohol will be more likely to contract an STD because of impaired decision making capabilities. While intoxicated, youth and young adults are more likely to engage in risky sexual behavior, including having sex at a younger age, having unprotected sex, or having sex with multiple partners (Lopez, 2003; Schulenberg, 2006)

2.7 Underage drinking and mental health problems

Adolescent alcohol involvement is associated with a wide variety of mental health concerns, ranging from low self-esteem, antisocial and deviant behaviors to depression and suicide (Ridenour et al., 2011). Mental health problems and other co-occurring disorders occur significantly more frequently among youth with alcohol use disorders than in the general population and substantially more often than can be accounted for by the base rates of these individual disorders (Simkin, 2002). Such co-occurrence can occur simultaneously or in some cases sequentially. Consequently, the timing of the onset of each disorder has important implications for the etiology of the problems, its severity, course of disorders as well as outcomes from treatment (el-Guebaly, 2004; Hulvershorn, Quinn, & Scott, 2015) .

2.8 Protective and Risk factors to alcohol use

The risk for substance abuse and other adverse behaviours increase as the number of risk factors increase, while protective factors are known to reduce the risk of youth engaging in substance use (Donovan & Molina, 2011, 2014). This interactive effect of risk and protective factors has substantial implications for the design and implementation of successful preventive interventions among the underage. The more a program reduces risk factors and increases protective factors, the more it is likely to succeed in preventing substance abuse among children and youth (Dever et al., 2012; Handley & Chassin, 2013; van den Eijnden, van de Mheen, Vet, & Vermulst, 2011). Early aggressive behavior, lack of parental supervision, academic problems, undiagnosed mental health problems, peer substance use, drug availability,

poverty, peer rejection, and child abuse or neglect are risk factors associated with increased odds of youth substance use and abuse. Risk factors that occur during early childhood further increase the risk of youth substance abuse (Hemphill et al., 2011; McMorris, Catalano, Kim, Toumbourou, & Hemphill, 2011). Prolonged risk factors including those that persist on from childhood through adolescence, are also associated with increased likelihood of youth substance abuse. Risk factors frequently associated with substance abuse are common across multiple disorders (Dever et al., 2012; McMorris et al., 2011; Wray-Lake et al., 2012). However, it is noteworthy that not all youth will develop substance abuse problems, even if they have experienced these risk factors.

Some individuals are exposed to protective factors that may cushion them from using substances. The presence of multiple protective factors can lessen the impact of a few risk factors. For example, strong protection, such as parental support and involvement, could diminish the influence of strong risks, such as having peers who abuse substances (van der Vorst, Engels, & Burk, 2010).

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Sites

The study was conducted in Murang'a and Kajiado counties. Murang'a County is located in Central Kenya and covers an area of 1,798Km² with a population of 942,581. The population density of Murang'a is 524 people per Km^2.The county has seven constituencies namely, Kigumo, Kiharu, Kangema, Maragua, Kandara, Gatanga, and Mathioya.

It is home to Kenya's key national monuments and attractions: Aberdare Ranges, which is one of the most important water catchment areas and supplies 55% of the water to Nairobi, Ndakaini Dam, Mathioya, Fort hall Monument, Mukurwe wa Nyagathanga (Considered the origin of the Kikuyu community). Murang'a is also a major tourist destination in the Country. 80% of the population in Murang'a relies on agriculture, informal sector, tourism and manufacturing. Coffee, tea, milk, fish, honey, maize, beans and macadamia are the main agricultural products. The study was conducted in public secondary schools based in Murang'a. The county had 246 public secondary schools with a student population of 84,874 at the time of the survey. According to studies carried out by NACADA in Central Kenya, Murang'a County has the highest prevalence rates of current alcohol use (25.5%) compared to other Counties in the region with men from this County reporting the highest usage of second generation alcohol at 22.4% (NACADA, 2010a). Data on underage drinking in this County is however scanty.

Kajiado County on the other hand is located at the southern tip of the former Rift Valley Province of Kenya. The county covers an area of 21,902.9 km^2 and has a population of 687,312. Kajiado is bordered by Tanzania to the southwest and the County of Taita Taveta (to the south east), Machakos County (to the east), Nairobi

County (to the north east), Kiambu County (to the north) and Narok County (to the west).

The economic strengths of Kajiado include natural resources as wildlife, open grasslands, wooded bush lands, open bushes, woodlands and forests. Main economic activities include pastoralist livestock herding, tourism, agriculture and urban-life activities like cattle trading. The survey targeted representative public secondary schools in Kajiado. The county had 46 public secondary schools with a students' population of 15,986 at the time of the survey.

Studies done in sections of this County reveal alcohol use among in-school youths to be a major problem (Michuki, 2014; Ogunde, 2009). For example, among youths aged 14 years and below, the average age of onset to alcohol use was 11.3 years while for those aged between 14-17 years, the average age of onset was 14.3 years (Michuki, 2014). On the question of availability, 66% of those aged 14 years and below reported that alcohol was readily available while 58% of their counterparts aged 14-17 reported the same (Michuki, 2014). The present study thus attempts to address generalizability shortfalls identified in previous studies by examining the prevalence and correlates of underage drinking from a County perspective in a region known to not only enjoy the cosmopolitan status but located strategically along the border of Kenya and Tanzania. Fig 3.1 shows the maps of Murang'a and Kajiado relative to their population densities per Km^2.

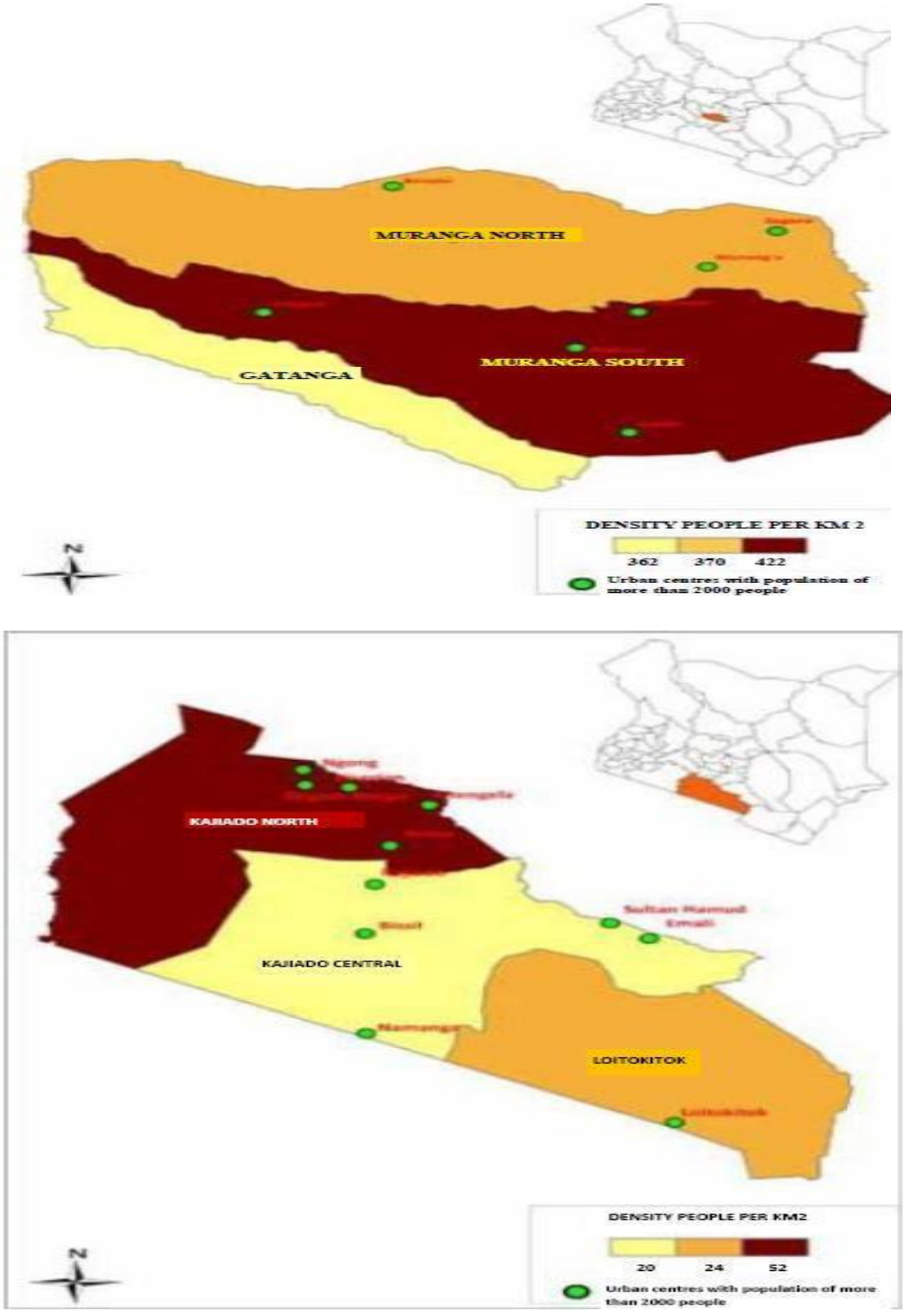

Figure 3.1: Maps of Murang'a and Kajiado Counties

3.2 Study Design

The study adopted a descriptive, cross sectional study design utilizing both quantitative and qualitative methods of data collection. The mixed methods approach provides a stronger understanding of the problem under investigation (Creswell, 2014). The quantitative part consisted of issuing pre-tested self-administered modified Global School-based Health Survey (GSHS) questionnaires (appendix 2) to students to assess alcohol use and other risky behaviour patterns. The qualitative part involved in-depth key informant interviews (appendix 3) with school heads, guiding and counselling teachers and school captains drawn from Schools in the two Counties

3.3 Study Population

The study population was underage high school students in public secondary schools in Murang'a and Kajiado Counties; both boarding and day schools. The target population was high-school students below the age of 18 years. This was an ideal group because they spend most of their time in school, therefore are accessible. The key informants included school heads, guiding and counselling teachers and school captains of sampled schools.

3.4 Sample size determination

Total sample size for the whole study was calculated using Godden (2004) formula recommended when the target population is greater than 50,000.

$$\boldsymbol{n = \frac{z^2 \times p(1-p)}{c^2}}$$

Where:

n- Sample size

z - value for selected alpha level (e.g. 1.96 for 95 per cent confidence level).

p - Prevalence of the population assumed to be drinking, expressed as a decimal

c - Confidence interval, expressed as decimal (e.g., .04 = +/- 4 percentage points)

The number of schools to be surveyed was fixed at 31 (21 in Murang'a and 10 in Kajiado) based on the available budget and logistics of undertaking the study. This represented 11 % of the total number of schools from both counties given that Murang'a and Kajiado had 246 and 46 schools respectively at the time of the survey. In order to obtain sufficiently representative sample size; z, p and c were taken as 1.96, 0.5 and 3.2% respectively, which resulted in a total sample size of 938 allocated as n = 643 for Murang'a and n= 295 for Kajiado (Table 3.1.)

3.4.1 Inclusion Criteria

To participate in this study, subjects were required to:

a) Be present in school on the day of interview
b) Consent to participate in the study

3.4.2 Exclusion Criteria

To be excluded from the study, subjects were required to:

a) Be sick or incapacitated in some other way
b) Decline to participate in the study
c) Be above 18 years

3.5 Variables

3.5.1: Dependent variable

The dependent variable for this study was alcohol use by underage high school students in Murang'a and Kajiado Counties.

3.5.2: Independent Variables

These included age, gender, religion, number of sexual partners, region, availability of alcoholic beverages, likelihood of being caught by police, alcohol expectations, alcohol use intensity, psychosocial distress, tobacco/bhang use, class-level, academic satisfaction, parental supervision, bullying, parental, friends and significant others' use of alcohol.

3.6 Sampling Procedures

3.6.1 Selection of schools using probability proportional to size technique

The study was conducted in Murang'a and Kajiado Counties. Selection of schools at each level of stratification was done by probability proportional to size technique. In total, 31 schools were selected. The technique gave a higher chance of selection to bigger schools or clusters. PPS sampling is 'a method of sampling from a finite population in which a size measure is available for each population unit before sampling and where the probability of selecting a unit is proportional to its size (Skinner, 2014). Its use arises in two particular contexts including multistage sampling or single-stage sampling of establishments. According to PPS, a list of schools with their population sizes was drawn and another column with the cumulative total added. Next, systematic sampling was used to select the 31 schools as follows. The cumulative total of the populations was divided by the number of schools needed (31 clusters) to get the sampling interval k. From the first interval, a random start g was selected using simple random sampling. Here a table of random numbers was used to get the random start. The school in which the g fell, was the first school to be selected. From the random start *g*, the *k*th number (*g* +*k*) became the second cumulative number to be selected. Like *g*, the cluster or school where the second cumulative number (*g* +*k*) fell became the second school/cluster to be selected. The process continued until 31 schools were selected. Table 3.1 shows 31 schools that were randomly selected using this procedure.

3.6.2 Selection of students using systematic sampling

Once the actual schools to be surveyed was determined, a sampling frame for each school was compiled. This consisted of all class lists for all eligible students as described in inclusion and exclusion criteria. Thereafter, a systematic sampling technique was applied as follows: a serialized list of students in each school was obtained and then a sampling interval *k* determined by dividing the total number of students (N) by the predetermined number of students required *(n)* per school. In the first *k* serial number was randomly selected by blindly pointing at the serialised list of students and this became the random start *g.* That is, the student with the serial number *g* was the first in the sample. From the random start, the *k*th numbers (g + *k, g* +2 *k, ..., g* +(n-1) *k)* was obtained thereafter. The students with the selected numbers were enrolled into the study. Table 3.1 shows the allocation of sample sizes by region, school and the respective skip interval width.

Table 3.1: Sample size distribution by region, school and sampling width

County	Sub-strata	School	(Total) n	Sample size	Skip interval
Kajiado		Noonkopir girls	(343)	34	10
		Isinya boys	(99)	10	10
		Kiserian mixed	(195)	19	10
		Olkeri mixed	(255)	25	10
		Ewuaso girls	(280)	28	10
		Najile boys	(404)	40	10
		oloolaiser	(500)	50	10
		Kiluani	(491)	49	10
		Sajiloni girls	(197)	20	10
		Meto mixed	(205)	20	10
Murang'a		Mirira Secondary	(248)	15	17
		Murang'aHigh	(1024)	62	17
		Mumbi Girls Sec	(678)	41	17
		St. Augustine Gikindu	(214)	13	17
		Nyakihai Sec	(188)	11	17
		Matu Secondary	(136)	8	17
		Kigumo Girls	(200)	12	17
		Njiiri School	(1268)	77	17
		Gaichanjiru High	(689)	42	17
		Gichagiini Secondary	(396)	24	16
		Ngararia Girls Sec	(704)	43	16
		Kandara Mixed Sec	(76)	5	15
		Kiangari Secondary	(273)	16	17
		Kiguoya Mixed Sec	(355)	21	17
		Kenyoho Secondary	(420)	25	17
		Mugoiri Girls High	(1125)	68	17
		Gitura Secondary	(474)	29	17
		Ichagaki Boys High	(445)	27	17
		Kamahuha Girls High	(846)	51	17
		Kambara Secondary	(333)	20	17
		Kiru Mixed Secondary	(552)	33	17
				N=938	

3.7 Data collection

3.7.1 Pre-test of the survey instruments

Pre-test of the questionnaire was done before actual data collection on a sample of 30 students from Huruma High school in Nairobi County. The school did not form part of the study site. The level of understanding of the questions was assessed. Ambiguous and vague questions were rephrased to convey the same meaning to all participants while some comments made by the respondents were incorporated into the final questionnaire.

3.7.2 Data Collection Methods and Research Instruments

A structured interview schedule (appendix 2) with closed and open ended questions was used to collect data on underage drinking using 10 trained research assistants (five males and five females) from each County. The questions contained simple but straightforward directions for the respondents so that they do not encounter any difficulty in answering the questions. On average, the quantitative interviews lasted 40 minutes.

In-depth key informant interviews (appendix 3) with thematic areas of interest covering magnitude of alcohol use, factors responsible for underage alcohol use and institutional support structures for the affected students were done. The interviews were conducted by three trained research assistants on 20 respondents with a majority drawn from Murang'a (12) versus Kajiado (8). The overall breakdown of participants was as follows: 9 head-teachers, 7 guiding and counselling teachers and 4 school captains. The interviews lasted between 40-50 minutes and were all recorded with the consent of respondents. The interviews were transcribed and independently analysed by the investigator, using NVIVO 10 (QSR, 1999–2011). This information was used to complement, explain and interpret quantitative data.

3.7.3 Reliability of the Study Instruments

GSHS was developed by the World Health Organization (WHO) and the Centres for Disease Control and Prevention (CDC) in collaboration with UNICEF, UNESCO, and UNAIDS. The GSHS survey uses a self-administered questionnaire to obtain data on young people's health behaviour and protective factors related to the leading causes of morbidity and mortality. The GSHS survey is conducted primarily among students aged 13–17 years. It has been used in different settings where it has been shown to be reliable and consistent in obtaining and reporting data on a host of issues affecting the young people (Assanangkornchai et al., 2010; Pichainarong & Chaveepojnkamjorn, 2010; Twa-Twa & Oketcho, 2005).

The GSHS uses a standardized scientific sample selection process; common school-based methodology; and core questionnaire modules, core-expanded questions, and country-specific questions that are combined to form a customised questionnaire that can be administered during one regular class period (Twa-Twa & Oketcho, 2005; WHO, n.d.).

3.8 Data Management and Analysis

3.8.1 Measures

3.8.1.1 Alcohol use: The main alcohol use question was, "During the past 30 days, on how many days did you have at least one drink containing alcohol?" Current drinking was defined as drinking alcohol on any of the days in the past 30 days prior to the study.

3.8.1.2 Other substance use: Tobacco/bhang smoking in the past 30 days was assessed with the question, "During the past 30 days, on how many days did you smoke cigarettes/bhang?" Response options included 0 = 0 days to 6 = all 30 days.

3.8.1.3 Psychosocial distress

Psychosocial distress variables: **Loneliness***:* ″During the past 30 days, how often have you felt lonely?"(Response options were from 0 = Never to 3 = Always). **Anxiety or worried**: "During the past 30 days, how often have you been so worried about something that you could not sleep at night?" (Response options were from 0 = Never to 3 = always). **Concentration**: "During the past 30 days, how often have you had a hard time staying focussed on your home-work or other things you had planned to do (Response options 0 = Never to 3 = Always). **Suicide**, Suicide plan: "During the past 6 months, did you ever consider attempting (0=NO, 1=Yes); "During the past 6 months, did you make a plan about how you would attempt suicide?"(Response option was 1 = Yes and 0 = No)

3.8.1.4 The sexual behavior: Items included in the analysis were: "During the past 12 months, have you had sexual intercourse*?″* Response option were "yes" or "no". If yes, with how many partners?

3.8.2 Statistical Methods

Data entry, exploratory analyses, calculation of frequencies and proportions were done using IBM SPSS (version 23.0) and bivariate logistic regression fitted using the Zelig package in R version 3.0.2. Best fitting models were selected based on Akaike Information Criterion. As always, models with minimum AICs were considered the best fitting.

Results on background characteristics were presented using frequencies, percentages and graphs for overall analyses (regardless of county) and for Murang'a and Kajiado county datasets separately. Next, prevalence rates of alcohol use were also presented using percentages alongside their 95% confidence intervals (with stratification done by County).

In order to investigate variables that were significantly associated with current alcohol use, logistic regression models were fitted to the overall and county specific datasets. The explanatory variables involved background characteristics, individual

and institution level covariates. Variable selection involved fitting separate unadjusted models for each explanatory variable versus alcohol use (outcome). Variables that were not significant (p-value > = 5%) were dropped from analysis. Variables that were significant ($p < 0.05$) were further used in an adjusted regression model. Adjusted model aimed to model alcohol use as a function of all the variables that were selected in the unadjusted analyses. Model results were presented using odds ratio together with their corresponding 95% confidence intervals (plus p-values).

3.9 Ethical considerations

There is wide consensus among health and social scientists that research involving human participants should be performed with the informed consent of the participants (Frankfort-Nachmias & Nachmias, 2008). Ethical considerations were pertinent to this study because of the nature of the problem, the methods of data collection and the kind of persons serving as research participants i.e. underage students possibly implicated in alcohol use. Hence the study took cognizance of the fact that this study was investigating very sensitive issues that were likely to elicit hostility and concealment of the real data required from the participants. Participants were informed of the nature of the study and allowed to choose whether to participate or not. Permission to carry out the study was obtained from the County Director of Education from both Murang'a and Kajiado. Informed consent was sought from the school principals. Anonymity, confidentiality and privacy of the study participants were safeguarded. To protect the privacy and confidentiality of the study participants, a secluded classroom or hall was identified in each of the schools where the subjects sat for the interviews. Furthermore, the study was undertaken after approval by Kenyatta University Ethics Review Committee and a research permit obtained from the National Commission for Science and Technology and Innovation (NACOSTI).

CHAPTER FOUR

RESULTS

4.1 Characteristics of the Respondents

Overall, the study obtained data from 938 respondents (61.9% males and 38.1% females). This constituted 100% response rate. Majority (97.7%) of the respondents were Christians followed by Muslims (1.8%) with the remaining religions accounting for less than 1 %. Most of the sampled respondents were drawn from forms two to four as most of the form ones had not reported to school at the time of the interviews. More than half (55%) of the respondents reported life-time use of alcohol with Murang'a County topping the list of those who reported life-time use of alcohol at 56%. This is shown in the Table 4.1 below.

Table 4.1: Background characteristics of respondents

Variable	**Total**		**Murang'a**		**Kajiado**	
	*n = **938***	***%***	*n = **643***	***%***	*n = **295***	***%***
Age Group (Years)						
< 16	205	21.9	135	21.0	70	23.7
>=16	733	78.1	508	79.0	225	76.3
Gender						
Female	357	38.1	237	36.9	120	40.7
Male	581	61.9	406	63.1	175	59.3
Religion						
Muslim	17	1.8	6	0.9	11	3.7
Christian	916	97.7	635	98.8	281	95.3
Others	5	0.5	2	0.3	3	1.0
Class						
Form 1	56	6.0	15	2.3	41	13.9
Form 2	323	34.4	245	38.1	78	26.4
Form 3	271	28.9	182	28.3	89	30.2
Form 4	288	30.7	201	31.3	87	29.5
Ever used alcohol						
Yes	515	55.0	360	56.0	155	52.7
No	422	45.0	283	44.0	139	47.3

4.2. Prevalence of alcohol use among underage high school students in Murang'a and Kajiado Counties

The study recorded an overall prevalence of current alcohol use (defined as use of an alcoholic drink 30 days prior to the study) among underage high-school students at 37% with slight regional variations (38% in Murang'a and 36% in Kajiado). Alcohol consumption was more prevalent among male students (43.5%) compared to their female counterparts (26.3%). Overall, the use of alcohol was more prevalent among form four students, followed by form three, then form two and finally form one. Between the Counties however, alcohol was more prevalent among the form fours in Murang'a and form threes in Kajiado. Notably, the use of alcohol was also more prevalent among students aged 16 years and above (40.0%) as compared to those aged 16 years and below (26.2%). See Table 4.2 below.

Table 4.2: Prevalence of Current alcohol use by background characteristics

Variable	Overall Prevalence (37%)	Murang'a (38%)	Kajiado (36%)
	% 95% CI	*% 95% CI*	*% 95% CI*
Age Category			
Less than 16 years	26.3[20.3- 32.4]	24.4[17.2 -31.7]	30.0 [19.3 -40.7]
16 years and above	40.0[36.4- 43.5]	41.1[36.9 -45.4]	37.3 [31.0 -43.7]
Gender			
Female	26.3[21.8- 30.9]	26.6[21.0 -32.2]	25.8 [18.0 -33.7]
Male	43.5[39.5- 47.6]	44.1[39.3 -48.9]	42.3 [35.0 -49.6]
Religion			
Muslim	29.4[7.8 - 51.1]	16.7[13.2 -46.5]	36.4[7.9 - 64.8]
Christian	36.9[33.8- 40.0]	37.6 [33.9-41.4]	35.2[29.6 -40.8]
Others	80.0[44.9-100.0]	_	66.7[13.3 -100.0]
Class			
Form 1	25.0[13.7- 36.3]	33.3[9.5 - 57.2]	22.0 [9.3 - 34.6]
Form 2	27.9[23.0- 32.8]	27.8[22.1 -33.4]	28.2 [18.2 -38.2]
Form 3	42.8[36.9- 48.7]	41.8[34.6 -48.9]	44.9 [34.6 -55.3]
Form 4	44.1[38.4- 49.8]	46.3[39.4 -53.2]	39.1 [28.8 -49.3]

Note CI=Confidence Interval

4.2.1 Drinking Debut in Murang'a and Kajiado Counties

The study recorded a mean age of drinking debut at 12.28 years ± s.d. 3.1 and the mean age of the participants at 16.3 years ±s.d. 0.8 with no marked variations in

drinking debut between Murang'a and Kajiado Counties. This is shown in Table 4.3 below.

Table 4.3: Mean Age of participants and Drinking Debut

Variable	**Overall**		**Murang'a**		**Kajiado**	
	M	***SD***	***Mean***	***SD***	***Mean***	***SD***
Age	16.2	0.9	16.3	0.8	16.2	1.0
Onset Age	12.3	3.1	12.2	3.2	12.5	3.0

Note: M=Mean, SD=Standard deviation

4.2.2 Prevalence of current alcohol use by individual-level factors.

Descriptive statistics for both Murang'a and Kajiado County revealed that alcohol use was more prevalent among students who reported psychosocial distress symptoms, had experienced suicidal ideations, missed school, smoked tobacco and bhang, had low academic grades coupled with having high alcohol expectations. This is shown in Table 4.4.

Table 4.4: Prevalence of Current alcohol use by Individual-level Factors

Variable	Response	Overall (37%)	Murang'a (38%)	Kajiado (36%)
		% 95% CI	% 95% CI	*% 95% CI*
Psychosocial Distress				
a. Getting Lonely	1.Never/Rarely	32.3[27.8 -36.9]	34.6 [28.9 - 40.2]	27.7 [20.0 - 35.4]
	2.Sometimes	37.4 [32.8-41.9]	37.0 [31.5 - 42.5]	38.2 [29.8 - 46.5]
	3.Always	53.3[43.8 -62.9]	52.1 [40.5 - 63.7]	55.9 [39.2 - 72.6]
			31.8 [27.2 - 36.4]	28.3 [21.8 - 34.8]
b. Often Worrying	1.Never/Rarely	30.7[26.9 -34.4]		
	2.Sometimes	44.1[38.5 -49.8]	42.9 [36.0 - 49.7]	46.9 [36.9 - 56.9]
	3.Always	61.3[49.2 -73.4]	63.8 [50.1 - 77.6]	53.3 [28.1 - 78.6]
c. Losing concentration	1.Never/Rarely	29.9[24.6 -35.3]	30.6 [24.1 - 37.1]	28.6 [19.3 - 37.9]
	2.Sometimes	39.6[34.5 -44.6]	39.7 [33.8 - 45.6]	39.2 [29.5 - 48.9]
	3.Always	40.7[35.0 -46.3]	42.1 [34.9 - 49.2]	38.3 [29.1 - 47.5]
d. Attempted Suicide	No	33.8[30.6- 37.1]	34.9 [30.9 - 38.9]	31.7 [26.0 - 37.3]
	Yes	55.9[47.5- 64.2]	52.5 [42.7 - 62.2]	65.7 [50.0 - 81.4]
Alcohol Expectations				
a. Feel relaxed	1.Unlikely	27.7[24.1- 31.4]	29.0 [24.6 - 33.4]	24.7 [18.2 - 31.2]
	2.Likely	51.8[46.6- 57.0]	52.5 [46.2 - 58.9]	50.4 [41.6 - 59.2]
b. Gain confidence	1.Unlikely	28.8[25.0- 32.6]	30.2 [25.7 - 34.8]	25.3 [18.6 - 32.0]
	2.Likely	48.6[43.6- 53.6]	48.8 [42.7 - 55.0]	48.1 [39.6 - 56.6]
c. Feel happy	1.Unlikely	25.5[21.7- 29.2]	26.3 [21.7 - 30.8]	23.8 [17.2 - 30.3]
	2.Likely	51.2[46.4- 56.0]	51.9 [46.1 - 57.7]	49.6 [41.2 - 58.1]
d. Express feelings	Unlikely	26.3[22.3- 30.3]	26.7 [22.0 - 31.5]	25.2 [17.9 - 32.5]
	Likely	47.5[43.0- 52.0]	49.0 [43.5 - 54.6]	44.4 [36.7 - 52.1]
Number of Sexual Partners	1	27.6[24.1- 31.1]	27.8 [23.6 - 31.9]	27.1 [20.6 - 33.5]
	2	41.8[32.6- 51.0]	47.9 [36.3 - 59.5]	30.8 [16.3 - 45.3]
	>2	64.5[57.8- 71.2]	68.0 [59.8 - 76.3]	58.7 [47.5 - 69.8]
Smoking Bhang	Never	32.1[29.0-35.2]	33.6 [29.8 - 37.4]	28.7 [23.2 - 34.2]
	Yes	86.9[79.7-94.1]	86.0 [76.4 - 95.6]	88.2 [77.4 - 99.1]
Smoking cigarettes	Never	31.1[28.0-34.3]	31.7 [27.8 - 35.5]	30.0 [24.4 - 35.6]
	Yes	78.4[71.0- 85.9]	80.8 [72.0 - 89.5]	73.7 [59.7 - 87.7]
Missed School	Never	32.6[29.5- 35.8]	33.3 [29.5 - 37.1]	31.1[25.6 - 36.6]
	At least once	85.7[77.9-93.5]	83.6 [73.9 - 93.4]	90.9[78.9- 102.9]
Bullied	No	34.0[30.5- 37.4]	35.1 [31.0 - 39.3]	31.4 [25.3 - 37.5]
	Yes	47.4[40.7- 54.1]	46.8 [38.5 - 55.1]	48.6 [37.1 - 60.2]
Academic Satisfaction	Very Satisfied	26.8[18.0- 35.6]	24.7 [14.8 - 34.5]	33.3 [14.5 - 52.2]
	Somehow Satisfied	38.6[32.2- 45.0]	41.1 [33.1 - 49.1]	33.8 [23.2 - 44.3]
	Not Satisfied	37.6[33.7- 41.4]	38.1 [33.4 - 42.8]	36.3 [29.5 - 43.2]
	Unsure	52.6[30.2- 75.1]	53.3 [28.1 - 78.6]	50.0 [1.0 - 99.0]

Note **CI**= Confidence interval

4.2.3 Number of drinks consumed per day by the underage in Murang'a and Kajiado Counties

Overall, more male students (6%) were engaged in hazardous drinking (drinking more than 2 drinks for males and 1 for females per day) compared to their female counterparts (3.2%). Kajiado had the highest percentage of those who engaged in hazardous drinking (reaching 4 or more drinks per day) at 7.6 %. This is shown in Figure 4.1.

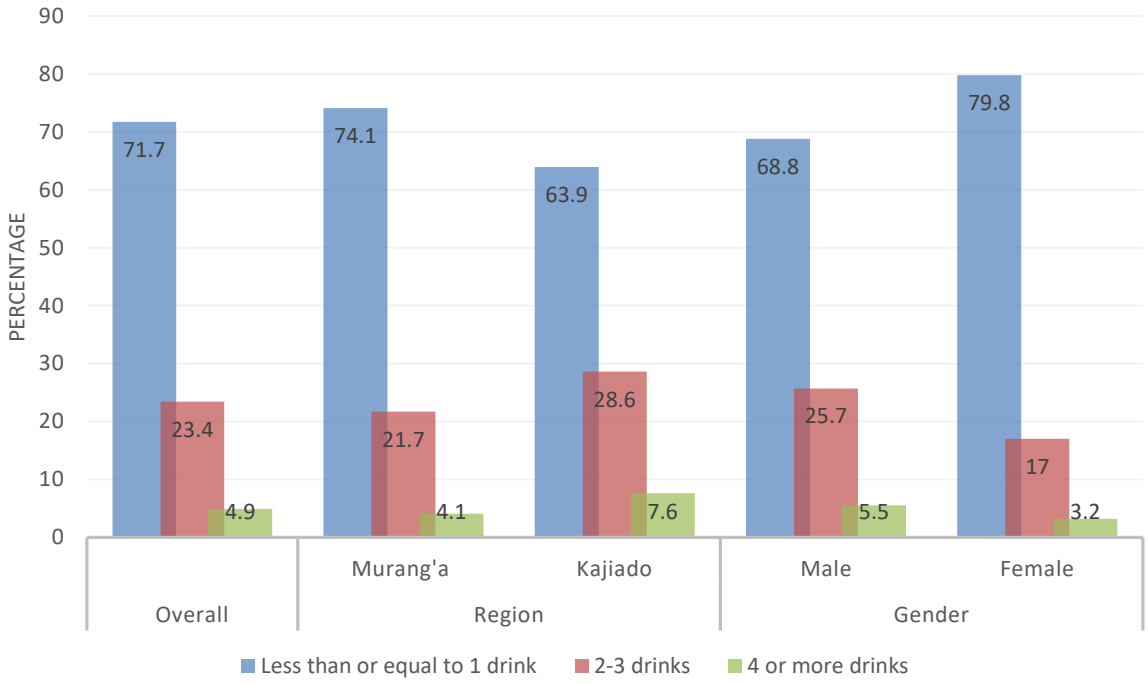

Figure 4.1: Distribution of Drinkers by number of drinks per day 30 days prior to the study

4.2.4 Binge drinking episodes by the underage in Murang'a and Kajiado Counties

Further, with regard to those students who drink, the study sought to establish the proportion of those who had engaged in binge drinking episodes as reported in the past one year. Overall, among the drinking group, 79% of them had indulged in

binge drinking for at least 1-6 days in the past 12 months, 11% for at least 7-12 days, with yet another 10.4 % engaging in binge drinking for more than 13 days in the past 12 months. Kajiado County (16.9%) had the highest proportion of those who had practiced binge drinking on most number of days (more than 13 days in a year) when compared to Murang'a. Moreover, boys (11%) were more likely to binge drink on numerous occasions as compared to girls (7.7%). See Fig 4.2.

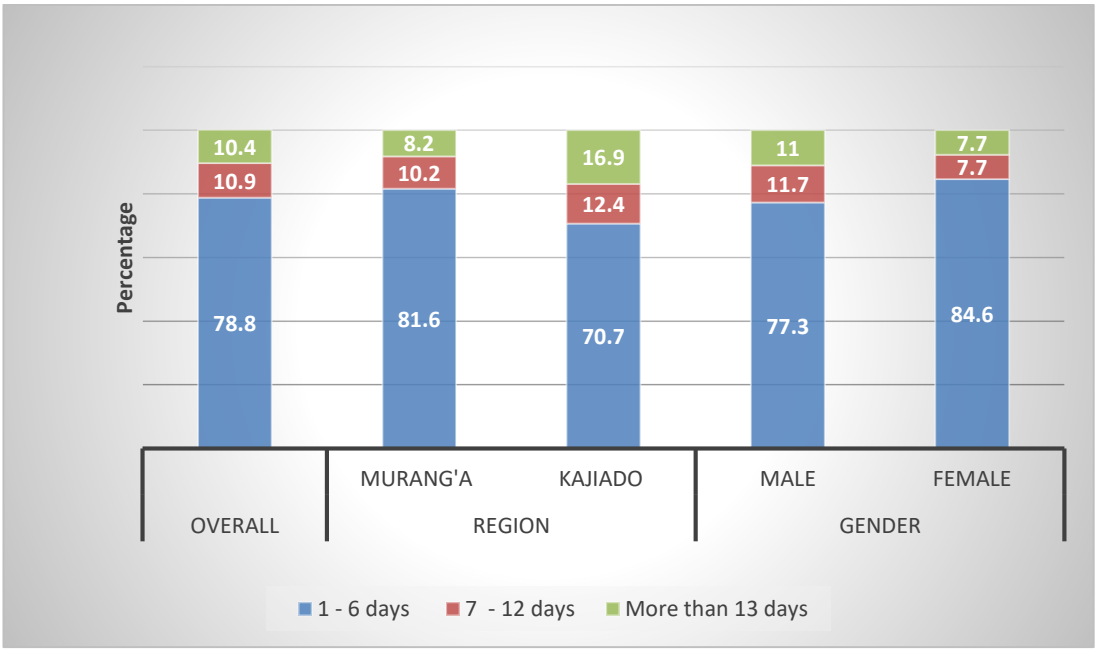

Figure 4.2*:* Binge drinking episodes within 12 months prior to the study

4.2.5 Prevalence of current alcohol use by institutional-level factors

The second objective of the study was to establish institutional-level factors associated with alcohol use among the underage in Murang'a and Kajiado Counties. Descriptive statistics revealed higher percentages of alcohol use among respondents whose parents, friends, peers and adult role models engaged in alcohol use. Also, the ease with which it was to get an adult to buy alcohol, the presence of alcohol selling outlets and the likelihood of being caught by police had a bearing on underage drinking. In other words, the proportion of minors who found it easy to find an adult to buy alcohol on their behalf, had access to alcohol selling outlets and were less

likely to be caught by police while drinking was higher. Moreover, alcohol use was less prevalent among those students whose parents were involved in their homework, understood their problems as well as understood what they were doing with their free time. This relationship is shown in Table 4.5.

Table 4.5: Prevalence of Current alcohol use by Institutional-level Factors

Variable	Overall (37%)	Murang'a (38%)	Kajiado (36%)
	% 95% CI	% 95% CI	% 95% CI
Ease of getting an adult to buy a drink			
Difficult	23.1 [18.9-27.3]	23.3 [18.3 - 28.4]	22.7 [15.2 - 30.2]
Unsure	33.1 [25.1-41.1]	29.9 [20.3 - 39.5]	39.1 [25.0 - 53.2]
Easy	51.2 [46.4 -56.0]	53.5 [47.7 - 59.3]	46.2 [37.6 - 54.7]
Ease of getting caught by Police			
Likely	31.8 [27.2 -36.4]	34.4 [28.9 - 39.9]	24.8 [16.5 - 33.0]
Unsure	47.5 [41.5 -53.6]	45.6 [37.9 - 53.3]	50.5 [40.7 - 60.2]
Unlikely	34.6 [29.1 -40.1]	35.9 [29.2 - 42.5]	31.8 [22.1 - 41.5]
Parental Factors			
a. Involvement in homework			
Most of the time/Always	30.9 [26.3 -35.5]	30.7 [25.2 - 36.2]	31.3 [22.8 - 39.8]
Never/Rarely	41.2 [36.4 -46.1]	42.5 [36.6 - 48.4]	38.6 [30.1 - 47.0]
Sometimes	41.2 [33.4 -49.0]	43.0 [33.3 - 52.7]	37.7 [24.7 - 50.8]
b. Understanding of their problems			
Most of the time/Always	31.2 [26.6 -35.7]	32.8 [27.5 - 38.1]	26.3 [17.6 - 34.9]
Never/Rarely	41.0 [35.3 -46.7]	41.7 [34.6 - 48.8]	39.6 [30.1 - 49.1]
Sometimes	41.8 [35.6 -47.9]	42.2 [34.4 - 50.0]	41.1 [31.2 - 50.9]
c. know how they spend free time			
Most of the time/Always	25.4 [20.9 -29.9]	28.1 [22.4 - 33.8]	20.2 [13.1 - 27.2]
Never/Rarely	46.9 [41.7 -52.1]	45.7 [39.4 - 51.9]	49.5 [40.2 - 58.9]
Sometimes	40.4 [33.9 -46.9]	39.9 [32.2 - 47.5]	41.7 [29.2 - 54.1]
Others' drinking behavior			
a. Mother/Step mother			
No	33.4 [30.1 -36.7]	34.0 [29.9 - 38.0]	32.2 [26.4 - 38.1]
Yes	54.8 [47.0 -62.6]	56.1 [46.7 - 65.5]	52.0 [38.2 - 65.8]
b. Father/Step Father			
No	30.8 [26.6 -35.0]	30.7 [25.5 - 35.9]	31.0 [23.8 - 38.2]
Yes	43.0 [38.5 -47.4]	43.8 [38.5 - 49.1]	40.9 [32.6 - 49.1]
c. Other adults			
No	24.9 [18.3 -31.4]	24.0 [16.4 - 31.6]	27.1 [14.5 - 39.7]
Yes	39.7 [36.2 -43.1]	40.8 [36.6 - 45.0]	37.2 [31.2 - 43.3]
d. Best friend			
No	19.6 [15.9 -23.4]	20.5 [15.9 - 25.0]	17.6 [10.9 - 24.3]
Yes	51.6 [47.2 -55.9]	52.9 [47.6 - 58.2]	48.8 [41.3 - 56.3]
e. Age mates			
No	19.2 [14.5 -23.9]	19.9 [14.2 - 25.6]	17.5 [9.2 - 25.8]
Yes	44.2 [40.5 -48.0]	45.1 [40.5 - 49.7]	42.3 [35.7 - 48.9]
Other Students Helpful			
Never/Rarely	44.2 [36.4 -52.0]	43.8 [34.6 - 52.9]	45.5 [30.7 - 60.2]
Sometimes	38.5 [33.1 -43.8]	40.8 [34.3 - 47.4]	33.3 [24.0 - 42.6]
Most of the time/Always	33.5 [29.3 -37.8]	33.2 [28.0 - 38.4]	34.2 [26.7 - 41.8]

4.2.6 Access to alcohol by the underage in Murang'a and Kajiado County

Overall, more than half (53%) of the respondents reported that it was easy to access beer, followed by spirits (48%), wine (44%), chang'aa (26 %) and traditional liquor (24%). The popular traditional liquor in Murang'a was called Muratina whereas in Kajiado it was Esukuroi. There were no marked variations in the accessibility of beer, spirits and wine in Murang'a and Kajiado Counties. In other words, it was easier to obtain the branded alcoholic beverages as opposed to the locally brewed alcohol. See Fig.4.3.

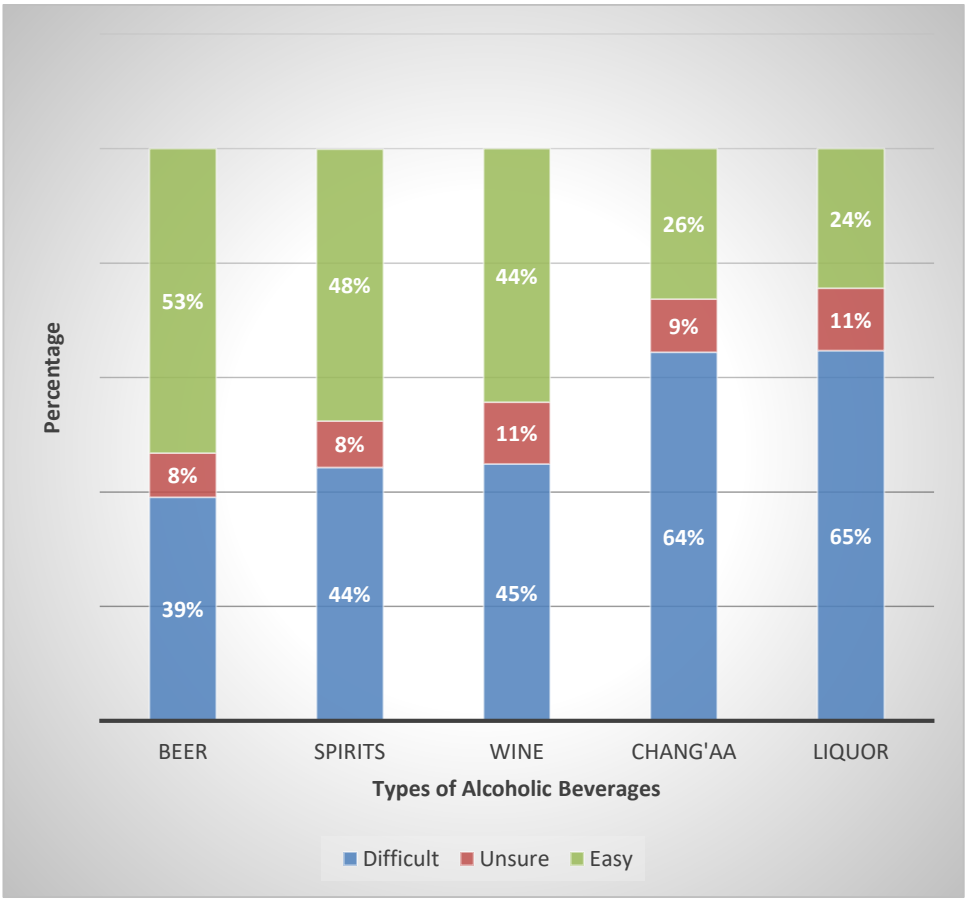

Figure 4.3: Overall ease of accessing alcoholic beverages by the underage

It was however more difficult to get the alcoholic beverages in Murang'a than in Kajiado County. Compare Fig.4.4 and Fig. 4.5 below.

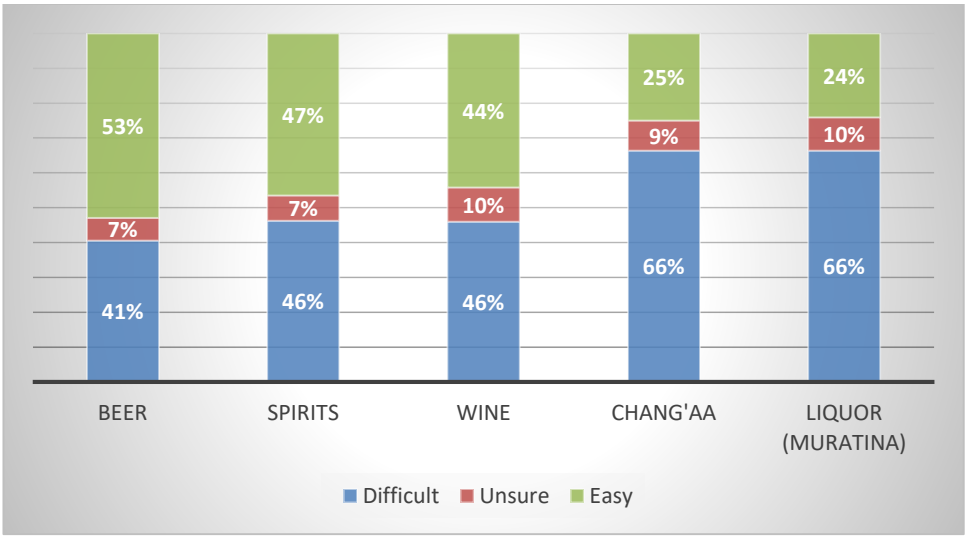

Figure 4.4:Accessibility to alcoholic beverages by the underage in Murang'a County

In other words, it was easier to get alcoholic beverages in Kajiado compared to Murang'a.

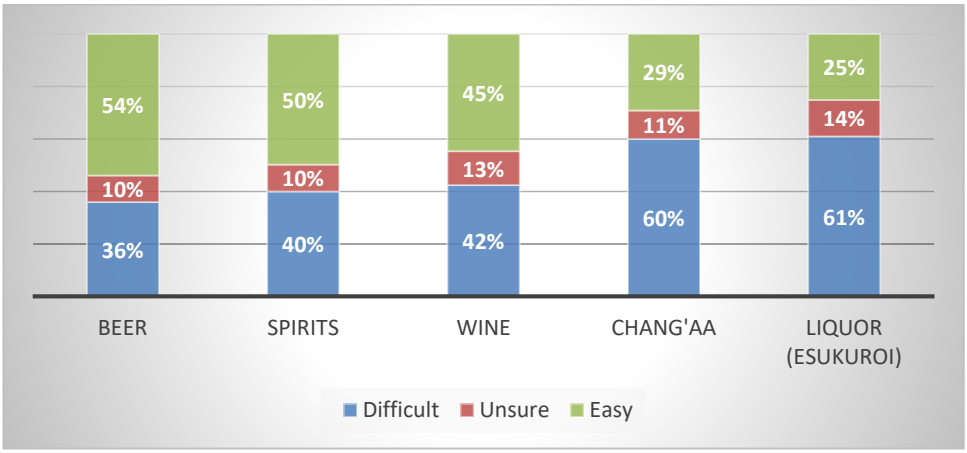

Figure 4.5:Accessibility to alcoholic beverages by the underage in Kajiado County

4.2.7 Means of obtaining alcohol by the underage in Murang'a and Kajiado

The study also sought to establish the means by which the underage obtained alcohol in the two Counties. Results indicate that more than a third of the alcoholic drinks in both Murang'a and Kajiado were procured by friends. These was followed by direct purchases made from either shops, street vendors or liquor stores. Murang'a had the highest cases of underage students who obtained alcohol by giving older adults money to buy on their behalf (13%) compared to Kajiado (5%). The results are presented in Fig 4.6 and Fig.4.7.

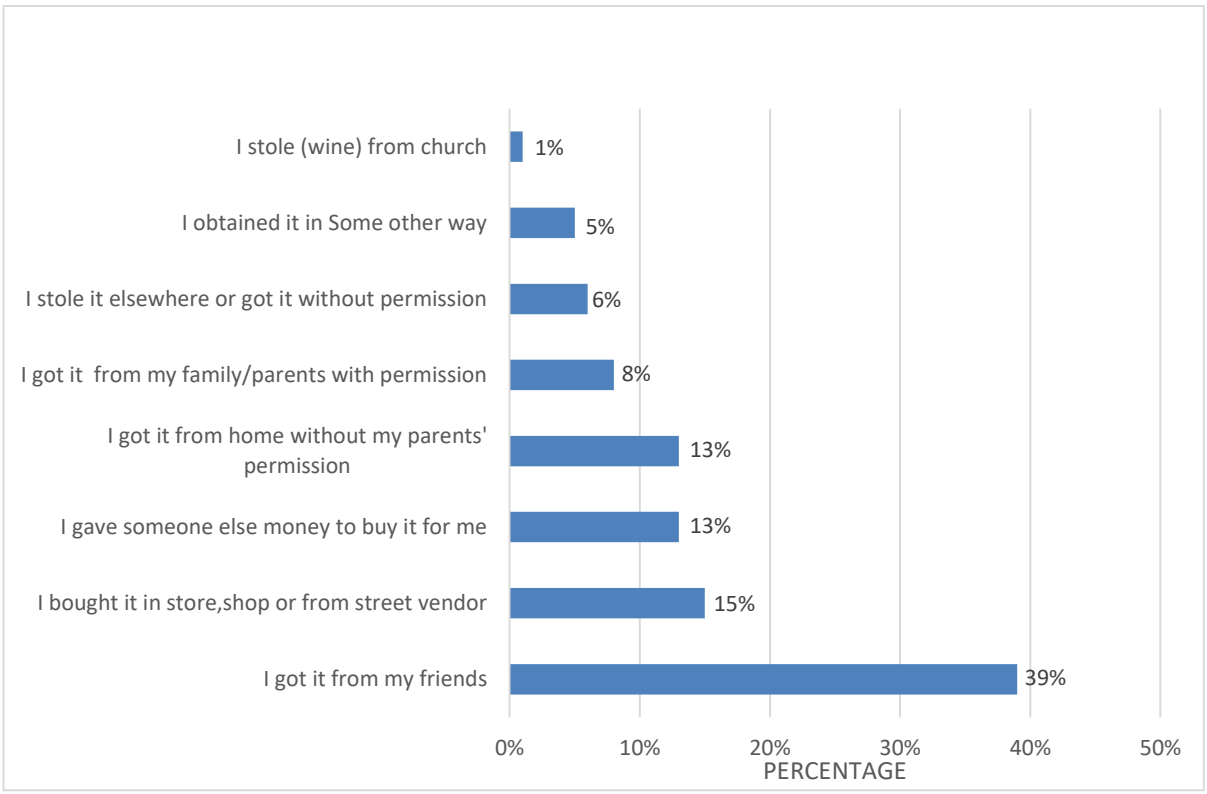

Figure 4.6*:* Means of accessing alcohol in Murang'a by underage who ever used.

Murang'a County had the highest proportion of underage students (13%) who obtained alcohol directly from their home environments without their parents' knowledge compared to Kajiado (10%). Notably 9% and 8% of the underage students in Kajiado and Murang'a respectively obtained alcohol through their family members or with parental permission.

The proportion of underage students from both Murang'a and Kajiado Counties who obtained alcohol through stealing away from their homes without permission was 6 %.

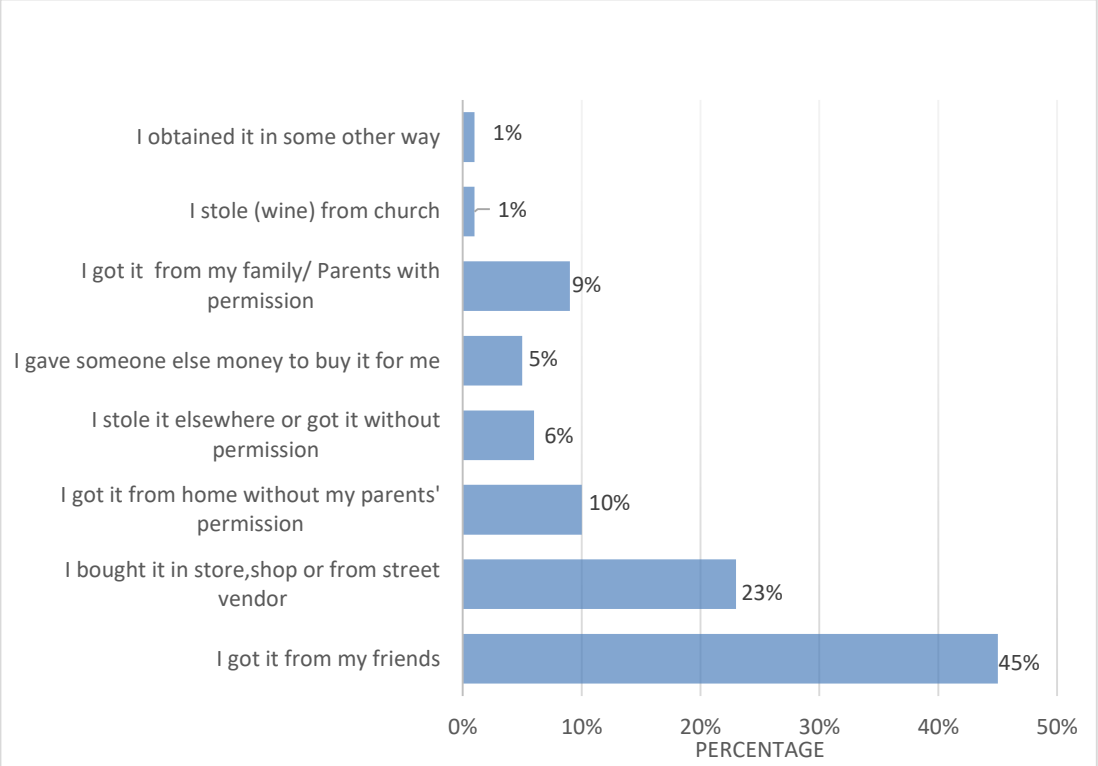

Figure 4.7: Means of accessing alcohol in Kajiado by underage who ever used

4.2.8 Sources of Alcoholic drinks for the underage in Murang'a and Kajiado Counties

Further, the survey sought to establish the sources of alcoholic drinks for the young people below the legal drinking age of 18 who currently drink. Close to two thirds of the respondents who could have mostly been from day-schools obtained alcohol from bars or pubs, restaurants and night clubs. Still, close to one fifth of the students took advantage of the freedom enjoyed during sporting events away from school to access alcoholic beverages. In addition, 11.4% of the students visited liquor stores, 9.7% supermarkets with yet another 4.1% obtaining alcohol from the convenience stores. This is shown in figures 4.8.

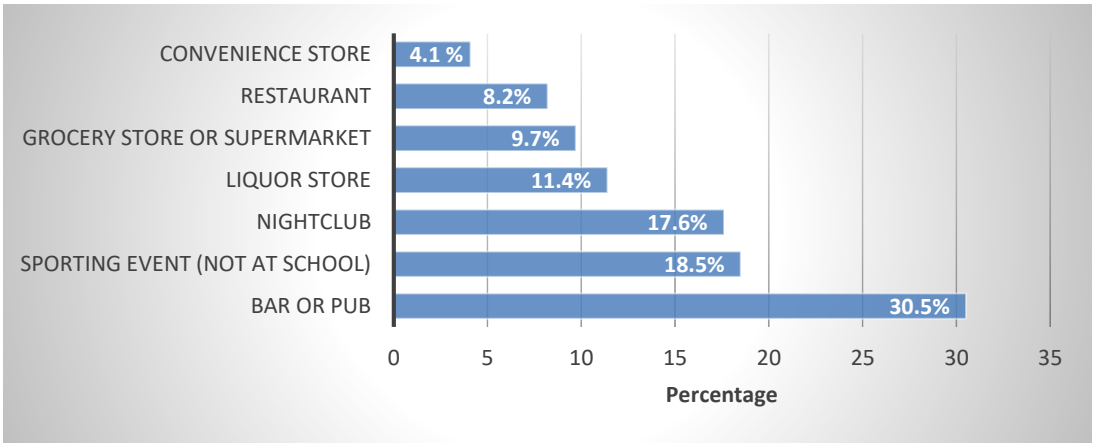

Figure 4. 8: Sources of Alcoholic drinks for minors in both Murang'a and Kajiado

4.2.9 Offer of buying or selling alcohol to the underage in Murang'a and Kajiado Counties

The number of underage high school students who had been offered (or bought for) alcohol in the last two months a high number of times (4 or more times) was substantial in Murang'a (31%) compared to Kajiado (28%). See Fig. 4.9

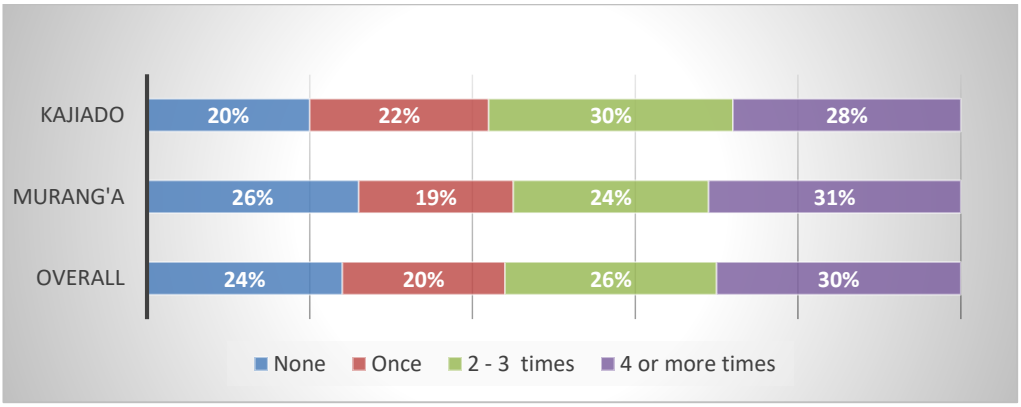

Figure 4. 9: Offer of buying or selling alcohol to the minors in Murang'a and Kajiado

Female underage students reported the highest proportion (32%) for the highest bid of offers (4 or more time) compared to their male counterparts (30%) from persons volunteering to buy alcohol for them. See Fig.4.10.

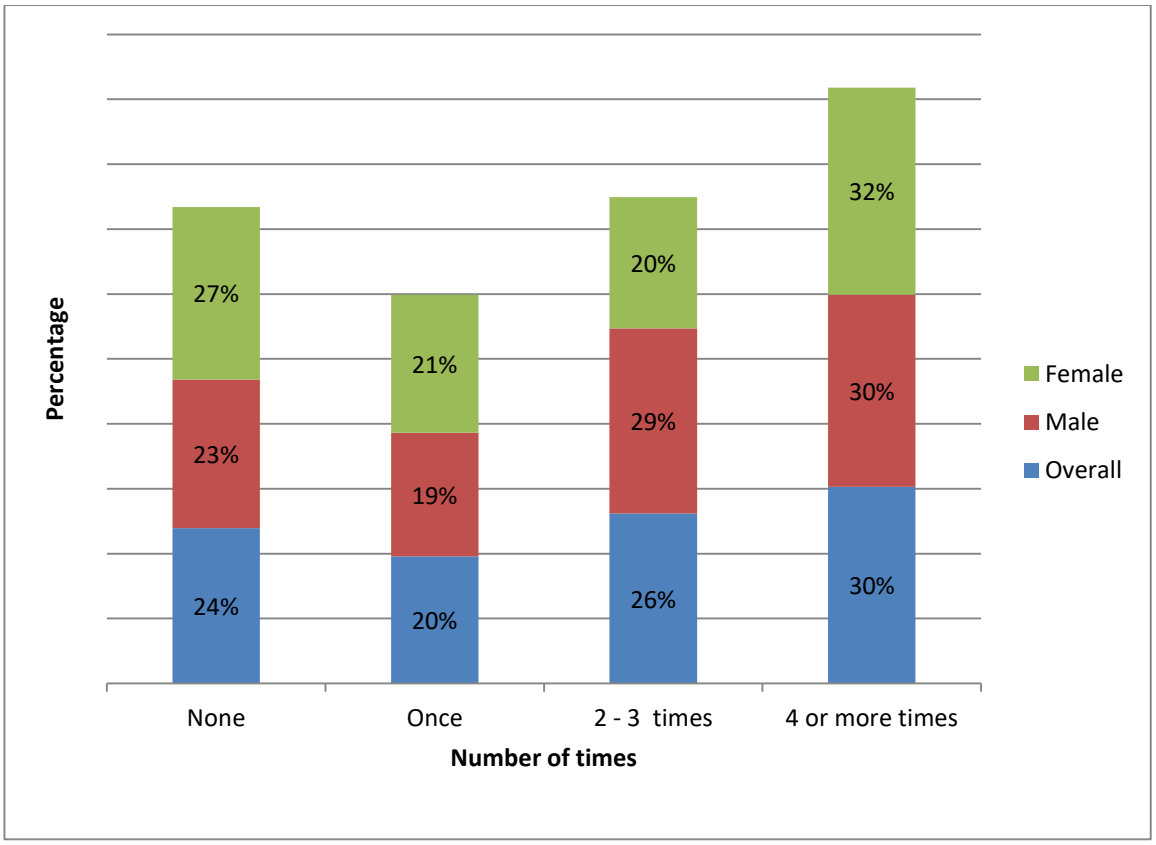

Figure 4.10:Offer of buying or selling alcohol to minors in the 2 months preceding the study by Gender

4.3 Correlates of alcohol use among underage high-school students in Murang'a and Kajiado Counties

This section presents the results of both individual and institutional-level factors associated with alcohol use among underage high-school students. First the results of multivariable logistic regression of individual-level factors derived from background or socio-demographic data are presented, followed by other individual and institutional-level factors.

4.3.1 Background individual-level factors associated with alcohol use among underage high-school students in Murang'a and Kajiado Counties

The results of unadjusted odds ratios of background individual-level factors are presented in Table 4.6. From these results, age, male gender and class-level were significantly associated with alcohol use among underage high-school students in the study areas. Religion on the other hand was not significant associated with underage drinking and was thus excluded from the final model.

Table 4.6: Unadjusted Logistic Regression estimates on background Individual-level factors

Variable	Overall		Murang'a		Kajiado	
	UOR (95% C.I)	p value	UOR (95% C.I)	p value	UOR (95% C.I)	p value
Age (Years)	1.4[1.2 -1.7]*	0.000	1.5 [1.3 - 1.9]*	0.000	1.2 [0.9 - 1.5]	0.299
Gender						
Male	2.2[1.6, 2.9]*	0.000	2.2 [1.5 - 3.1]*	0.000	2.1[1.3 -3.5]*	0.004
Female#						
Religion						
Christian	1.4[0.5- 4.5]	0.528	3.0[0.5-58.2]	0.315	1.0[0.3 - 3.7]	0.939
Others	9.6[1.1-216.9]	0.069	_	_	3.5[0.3 -93.0]	0.366
Muslims#						
Class						
Form 1#						
Form 2	1.2 [0.6 - 2.3]	0.658	0.8 [0.3 - 2.6]	0.643	1.4 [0.6 - 3.6]	0.465
Form 3	2.2 [1.2 - 4.4]*	0.015	1.4 [0.5 - 4.8]	0.527	2.9[1.3- 7.2]*	0.015
Form 4	2.4 [1.3 - 4.7]	0.009	1.7 [0.6 - 5.7]	0.338	2.3 [1.0 - 5.7]	0.062

Note: UOR=Unadjusted Odds ratio, #=Reference Level

The results of multivariable logistic regression on background individual-level factors after adjusting for confounders revealed that overall, current use of alcohol was significantly associated with being male (adjusted odds ratio [AOR]: = 1.7; 95% CI: 1.0-2.7, $p< 0.05$) as well as older age in Murang'a [AOR] = 1.5; 95% CI :1.0-2.1, $p< 0.05$). See Table 4.7. This means that male underage students were 1.7 times more likely to use alcohol compared to their female counterparts. The odds of drinking

were 1.5 times more among older students. These results are presented in Table 4.7 below.

Table 4.7 :Predictors of underage drinking at background-individual level

Variable	Overall		Murang'a		Kajiado	
	AOR (95%CI)	p value	AOR (95% C.I)	p value	AOR (95%C I)	p value
Age (Years)	1.3[1.0 - 1.9]	0.112	1.5[1.0 -2.1]*	0.034	1.1[0.5 - 2.4]	0.725
Gender						
Male	1.7[1.0 -2.7]*	0.044	1.8[1.0 - 3.2]	0.057	_	_
Female#						
Class						
Form 1#						
Form 2	0.5[0.1 - 1.6]	0.227	_	_	_	_
Form 3	0.5[0.1 - 1.8]	0.300	_	_	_	_
Form 4	0.5[0.1 - 1.8]	0.290	_	_	_	_

Note: CI=Confidence interval; AOR, Adjusted Odds Ratio, #=Reference level

4.3.2 Individual-level factors associated with underage alcohol use in Murang'a and Kajiado

The unadjusted odds ratios of the second set of individual-level factors are presented in Table 4.8. From these results, all the factors including psychosocial distress symptoms (getting lonely, often worrying, losing concentration and attempting suicide), alcohol expectations (relaxation, gain confidence, and express feelings), number of sexual partners, bullying, use of cigarette and marijuana, missing school as well as academic satisfaction were significantly associated with alcohol use

among underage high-school students in the study areas. They were consequently retained in the final model whose results are presented in Table 4.9.

Table 4.8: Unadjusted logistic regression analysis on individual-level factors

Variable	Overall		Murang'a		Kajiado	
	UOR (95%C.I)	p-value	UOR (95% C.I)	p-value	UOR (95% C.I)	p-value
Psychosocial Distress						
a. Getting Lonely						
Sometimes	1.2 [0.9 - 1.7]	0.130	1.1 [0.8 - 1.6]	0.544	1.6 [1.0 - 2.7]	0.075
Most of the time/Always	2.4 [1.5 - 3.7]*	0.000	2.1 [1.2 - 3.5]*	0.008	3.3 [1.5 - 7.3]*	0.003
Never/Rarely#						
b. Often Worrying						
Sometimes	1.8 [1.3 - 2.4]*	0.000	1.6 [1.1 - 2.3]*	0.008	2.2 [1.3 - 3.8]*	0.002
Most of the time/Always	3.6 [2.1 - 6.2]*	0.000	3.8 [2.0 - 7.3]*	0.000	2.9 [1.0 - 8.7]	0.052
Never/Rarely#						
c. Losing Concentration						
Sometimes	1.5 [1.1 - 2.1]*	0.011	1.5 [1.0 - 2.2]*	0.045	1.6 [0.9 - 3.0]	0.129
Most of the time/Always	1.6 [1.1 - 2.3]*	0.007	1.6 [1.1 - 2.5]*	0.021	1.6 [0.9 - 2.9]	0.153
Never/Rarely#						
d. Attempted Suicide						
Yes	2.5 [1.7 - 3.6]*	0.000	2.1 [1.3 - 3.2]*	0.001	4.1 [2.0 - 9.0]*	0.000
No#						
Alcohol Expectations						
a. Feel relaxed						
Likely	2.8 [2.1 - 3.7]*	0.000	2.7 [1.9 - 3.8]*	0.000	3.1 [1.9 - 5.1]*	0.000
Unlikely#						
b. Gain confidence						
Likely	2.3 [1.8 - 3.1]*	0.000	2.2 [1.6 - 3.1]*	0.000	2.7 [1.7 - 4.5]*	0.000
Unlikely#						
c. Express feelings						
Likely	2.5 [1.9 - 3.3]*	0.000	2.6 [1.9 - 3.7]*	0.000	2.4 [1.4 - 3.9]*	0.001
Unlikely#						
Number of Sexual Partners	2.2 [1.8 - 2.6]*	0.000	2.4 [1.9 - 2.9]*	0.000	1.9 [1.4 - 2.5]*	0.000
Bullied						
Yes	1.8 [1.3 - 2.4]*	0.000	1.6 [1.1 - 2.4]*	0.013	2.1 [1.2 - 3.6]*	0.009
No#						
Cigarette Smoker						
Yes	8.0 [5.1 13.1]*	0.000	9.1 [5.1 16.9]*	0.000	6.5 [3.1 - 14.8]*	0.000
No#						
Bhang Smoker						
Yes	14.0 [7.628.4]*	0.000	12.2 [5.730.1]*	0.000	18.6 [7.0 - 64.5]*	0.000
No#						
Missed School at least once						
Yes	12.4 [6.25.1]*	0.000	10.2 [5.122.7]*	0.000	22.1 [6.2141.7]*	0.000
No#						
Academic Satisfaction						
Somehow Satisfied	1.7 [1.0 - 2.9]*	0.045	2.1 [1.2 -4.1]*	0.018	1.0 [0.4 - 2.8]	0.969
Not Satisfied	1.6 [1.0 - 2.7]*	0.043	1.9 [1.1 -3.4]*	0.030	1.1 [0.5 - 3.0]	0.776
Unsure	3.0 [1.1 - 8.5]*	0.031	3.5 [1.1 11.4]*	0.033	2.0 [0.2 - 19.7]	0.528
Very Satisfied#						

Note CI=Confidence Interval, #=Reference level

The results of logistic regression on individual-level factors revealed that overall, current use of alcohol was significantly associated with cigarette use (adjusted odds ratio [AOR]=4.3; 95% CI:2.0-9.8, p< 0.05); missing school (AOR =3.2; 95% CI :1.8- 8.2, p<0.05) and psychosocial distress in the form of worries (AOR = 4.9; 95% CI:1.8- 14.3, p< 0.05). In other words, students who use tobacco were four times more likely to use alcohol than those who did not; those who missed school were 3 times more likely to use alcohol than those who went to school regularly. Moreover, students who experienced some form of worries were 5 times more likely to use alcohol than those who do not.

In Murang'a County, individual-level factors associated with underage alcohol use included: having multiple sexual partners (AOR = 4.2; 95% CI:1.4-14.0), cigarette use (AOR = 5.5; 95% CI:2.2-16.0, p< 0.05), missing school (AOR = 2.8; 95% CI:1.1-7.5, p< 0.05) and Psychosocial distress in the form of worries (AOR = 4.2; 95% CI:1.4-14.0, p< 0.05). This means that students with many sexual partners were 4 times more likely to use alcohol, and those who used cigarettes had up to a six-fold risk. Missing school increased the odds of drinking by nearly 3 times whereas some of worry among students increased the odds of drinking by up to 4 times. In Kajiado County, individual-level factors associated with underage alcohol use included: expectation to feel relaxed (AOR = 2.7; 95% CI:1.2-6.5, p<0.05) and bhang use (AOR = 5.2; 95% CI:1.4-24.9, p<0.05). In other words, students experiencing alcohol expectation of being relaxed were nearly three times more to use alcohol than those who did not. On the other hand, those students who smoked Bhang were five times more likely to engage in drinking than those who did not. See table 4.9.

Table 4.9: Individual level predictors of underage drinking

Variable	Overall		Murang'a		Kajiado	
	AOR (95% C.I)	p value	AOR (95% C.I)	p value	AOR (95% C.I)	p value
Psychosocial Distress						
a. Getting Lonely						
Sometimes	0.6 [0.4 - 1.1]	0.085	0.6 [0.3 - 1.1]	0.076	0.8 [0.4 - 1.7]	0.528
Most of the time/Always	0.7 [0.3 - 1.7]	0.421	0.6 [0.2 - 1.7]	0.354	0.9 [0.2 - 3.6]	0.938
Never/Rarely#						
b. Often Worrying						
Sometimes	1.5 [0.9 - 2.4]	0.103	1.2 [0.7 - 2.1]	0.541	1.9 [0.9 - 4.0]	0.097
Most of the time/Always	4.9 [1.8 - 14.3]*	0.003	4.2 [1.4 - 14.0]*	0.015	8.0 [1.2 - 55.5]	0.031
Never/Rarely#						
c. Losing Concentration						
Sometimes	1.7 [1.0 - 2.9]	0.063	1.7 [0.9 - 3.3]	0.088	1.1 [0.5 - 2.5]	0.891
Most of the time/Always	1.3 [0.7 - 2.4]	0.347	1.6 [0.8 - 3.3]	0.204	0.6 [0.2 - 1.4]	0.215
Never/Rarely#						
d. Attempted Suicide						
Yes	1.3 [0.7 - 2.4]	0.439	1.1 [0.5 - 2.2]	0.854	2.3 [0.8 - 6.4]	0.119
No#						
Alcohol Expectations						
a. Feel relaxed						
Likely	0.9 [0.5 - 1.6]	0.743	0.7 [0.4 - 1.3]	0.271	2.7 [1.2 - 6.5]*	0.020
Unlikely#						
b. Gain confidence						
Likely	1.1 [0.6 - 1.9]	0.743	1.0 [0.5 - 1.8]	0.888	1.2 [0.5 - 2.7]	0.709
Unlikely#						
c. Express feelings						
Likely	1.5 [0.9 - 2.6]	0.108	1.5 [0.8 - 2.9]	0.175	1.0 [0.4 - 2.2]	0.986
Unlikely#						
Number of Sexual Partners	1.2 [0.9 - 1.7]	0.152	1.5 [1.1 - 2.1]*	0.025	1.1 [0.7 - 1.7]	0.569
Bullied						
Yes	0.7 [0.4 - 1.2]	0.218	0.5 [0.3 - 1.0]	0.072	1.6 [0.7 - 3.4]	0.239
No#						
Cigarette Smoker						
Yes	4.3 [2.0 - 9.8]*	0.000	5.5 [2.2 - 16.0]*	0.001	2.3 [0.8 - 6.8]	0.126
No#						
Bhang Smoker						
Yes	2.6 [1.0 - 7.1]	0.051	2.1 [0.6 - 7.4]	0.238	5.2 [1.4 - 24.9]*	0.023
No#						
Missed School at least once						
Yes	3.2 [1.4 - 8.2]*	0.010	2.8 [1.1 - 7.5]*	0.034	6.2 [1.1 - 51.6]	0.053
No#						
Academic Satisfaction						
Somehow Satisfied	0.8 [0.3 - 1.9]	0.562	1.3 [0.5 - 3.4]	0.651	_	_
Not Satisfied	0.9 [0.4 - 2.0]	0.773	0.9 [0.4 - 2.3]	0.890	_	_
Unsure	2.1 [0.2 - 22.0]	0.508	1.1 [0.1 - 17.9]	0.922	_	_
Very Satisfied#						

Note CI=Confidence Interval, #=Reference level

4.3.3 Institutional-level factors associated with underage alcohol use in Murang'a and Kajiado Counties

Table 4.10 presents results of unadjusted logistic regression analysis on institutional-level factors. From these results, all the factors including ease of getting an adult to buy alcohol, likelihood of getting caught by the police, parental factors (involvement in homework, understanding of their children's problems, knowledge of how they spend their free time) influence of others' drinking behaviour (mother/step-mother, father/step-father, other adults, best friend, age-mates) and other students being helpful in school were significantly associated with alcohol use among underage high-school students in the study areas. They were consequently retained in the final model. Table 4.11 presents model results using odds ratio together with their corresponding 95% confidence intervals, plus exact p-values.

Table 4.10: Unadjusted Logistic Regression Analysis on Institutional-Level Factors

Variable	Overall		Murang'a		Kajiado	
	UOR (95% C.I)	p value	UOR (95% C.I)	p value	UOR (95% C.I)	p value
Ease of getting adult to buy a drink						
Unsure	1.6 [1.1 - 2.5]	0.025	1.4 [0.8 - 2.4]	0.222	2.2 [1.0 - 4.6]*	0.037
Easy	3.5 [2.6 - 4.7]*	0.000	3.8 [2.6 - 5.5]*	0.000	2.9 [1.7 - 5.1]*	0.000
Difficult#						
Getting Caught by Police						
Unsure	1.9 [1.4 - 2.7]*	0.000	1.6 [1.1 - 2.4]*	0.020	3.1 [1.7 - 5.7]*	0.000
Unlikely	1.1 [0.8 - 1.6]	0.442	1.1 [0.7 - 1.6]	0.739	1.4 [0.8 - 2.7]	0.281
Likely#						
Parental Factors						
Involved in homework						
Never/Rarely	1.6 [1.2 - 2.1]*	0.003	1.7 [1.2 - 2.4]*	0.005	1.4 [0.8 - 2.4]	0.240
Sometimes	1.6 [1.1 - 2.3]*	0.024	1.7 [1.1 - 2.7]*	0.029	1.3 [0.7 - 2.6]	0.415
Most of the time/Always#						
Understanding of their problems						
Never/Rarely	1.5 [1.1 - 2.1]*	0.008	1.5 [1.0 - 2.1]*	0.047	1.8 [1.0 - 3.4]*	0.048
Sometimes	1.6 [1.1 - 2.2]*	0.006	1.5 [1.0 - 2.2]*	0.049	2.0 [1.1 - 3.6]*	0.032
Most of the time/Always#						
Know how they spend free time						
Never/Rarely	2.6 [1.9 - 3.6]*	0.000	2.2 [1.5 - 3.2]*	0.000	3.9 [2.2 - 7.0]*	0.000
Sometimes	2.0 [1.4 - 2.8]*	0.000	1.7 [1.1 - 2.6]*	0.015	2.8 [1.4 - 5.6]*	0.003
Most of the time/Always#						
Others' Drinking behavior						
Mother/Step mother						
Yes	2.4 [1.7 - 3.4]*	0.000	2.5 [1.6 - 3.8]*	0.000	2.3 [1.2 - 4.2]*	0.010
No#						
Father/Step Father						
Yes	1.7 [1.3 - 2.2]*	0.000	1.8 [1.3 - 2.4]*	0.001	1.5 [1.0 - 2.5]	0.080
No#						
Other adults						
Yes	2.0 [1.4 - 2.9]*	0.000	2.2 [1.4 - 3.5]*	0.001	1.6 [0.8 - 3.3]	0.184
No#						
Best friend						
Yes	4.4 [3.3 - 5.9]*	0.000	4.4 [3.1 - 6.2]*	0.000	4.5 [2.6 - 7.9]*	0.000
No#						
Age mates						
Yes	3.3 [2.4 - 4.7]*	0.000	3.3 [2.2 - 5.0]*	0.000	3.5 [1.9 - 6.8]*	0.000
No#						
Other Students helpful						
Sometimes	0.8 [0.5 - 1.2]	0.233	0.9 [0.6 - 1.4]	0.611	0.6 [0.3 - 1.2]	0.171
Most of the time/Always	0.6 [0.4 - 0.9]*	0.017	0.6 [0.4 - 1.0]*	0.048	0.6 [0.3 - 1.2]	0.178
Never/Rarely#						

Note CI=Confidence interval, #=Reference level

Table 4.11 presents the results of logistic regression on institutional-level factors. The results of logistic regression on institutional-level factors revealed that overall, underage alcohol use was not significantly associated with the variables analysed. However, in moving to the individual counties, current use of alcohol among the

minors was significantly associated with the ease getting an adult to buy alcohol (AOR=2.1;95% CI:1.1-3.8, p<0.05) in Murang'a County and being unsure of being caught by the Police in Kajiado (AOR=2.7; 95 % CI: 1.2-6.4, p< 0.05). In other words, those students who found it easier to get an adult to buy alcohol on their behalf were 2.1 times more likely to use alcohol in Murang'a. In Kajiado on the other hand, being unsure of being caught by police while buying an alcoholic drink increased the odds of drinking by nearly three times. See Table 4.11.

Table 4.11: Institutional level Predictors of underage drinking

Variable	Overall		Murang'a		Kajiado	
	AOR (95% C.I)	p value	AOR (95% C.I)	p value	AOR (95% C.I)	p value
Ease of adult buying a drink						
Unsure	1.3 [0.7 -2.7]	0.413	1.2 [0.5 - 2.8]	0.752	1.2 [0.4 - 3.1]	0.727
Easy	1.9 [1.2 -3.2]	0.011	2.1 [1.1 - 3.8]*	0.019	1.5 [0.7 - 3.2]	0.282
Difficult#						
Getting Caught by Police						
Unsure	1.5 [0.9 - 2.7]	0.135	1.4 [0.7 - 2.8]	0.330	2.7 [1.2 - 6.4]*	0.022
Unlikely	0.9 [0.5 - 1.5]	0.599	0.9 [0.5 - 1.7]	0.750	1.0 [0.4 - 2.6]	0.932
Likely#						
Parent involved in homework						
Never/Rarely	0.8 [0.5 - 1.4]	0.529	0.9 [0.5 - 1.6]	0.701	_	_
Sometimes	1.4 [0.7 - 2.6]	0.360	1.4 [0.6 - 3.1]	0.451	_	_
Most of the time/Always#						
Parental understanding of their problems						
Never/Rarely	0.7 [0.4 - 1.2]	0.151	0.7 [0.3 - 1.4]	0.303	0.7 [0.3 - 1.6]	0.389
Sometimes	0.9 [0.5 - 1.5]	0.622	0.9 [0.4 - 1.7]	0.663	1.3 [0.6 - 2.9]	0.573
Most of the time/Always#						
Parents know how they spend free time						
Never/Rarely	1.3 [0.7 - 2.2]	0.400	1.2 [0.6 - 2.3]	0.667	1.7 [0.7 - 3.9]	0.248
Sometimes	1.3 [0.7 - 2.3]	0.463	1.1 [0.5 - 2.2]	0.877	2.1 [0.8 - 5.3]	0.112
Most of the time/Always#						
Influence of others' drinking						
a. Mother/Step mother						
Yes	1.4 [0.7 - 2.5]	0.308	1.6 [0.8 - 3.4]	0.201	0.8 [0.3 - 2.1]	0.716
No#						
b. Father/Step Father						
Yes	1.3 [0.8 - 2.1]	0.325	1.3 [0.7 - 2.3]	0.449	_	_
No#						
c. Other adults						
Yes	0.6 [0.3 - 1.3]	0.187	0.7 [0.3 - 1.5]	0.315		
No#						
d. Best friend						
Yes	1.6 [0.9 - 2.6]	0.099	1.7 [1.0 - 3.2]	0.073	1.6 [0.7 - 3.7]	0.281
No#						
e. Age mates						
Yes	1.5 [0.8 - 2.8]	0.183	1.6 [0.8 - 3.2]	0.228	1.3 [0.5 - 3.5]	0.547
No#						
Other Students helpful						
Sometimes	0.8 [0.4 - 1.6]	0.589	1.0 [0.5 - 2.1]	0.973	_	_
Most of the time/Always	0.8 [0.4 - 1.6]	0.555	0.9 [0.4 - 1.8]	0.719	_	_
Never/Rarely#						

Note **CI=Confidence interval, #=Reference level**

4.4 Results of In-depth Key Informant Interviews

4.4.1 The magnitude of alcohol use problem among the underage

There was consensus by in-depth key informants from both Counties that alcohol use by the underage was an emerging public health problem. However, since the Alcoholic Drinks Control act, 2010 out-laws selling of alcohol to youths below 18 years in Kenya, drinking at pubs and restaurants by the underage youths was not a common occurrence. This notwithstanding, the youth had resorted to clandestine means of accessing and using alcohol with a few of them managing to sneak it in the school compounds through adults. Other students however access alcohol while on sporting events or academic tours away from school. In some instances, the students indulge in binge drinking in what is popularly known as 'teen parties' during school holidays, which take place in different home environments. According to the respondents, what is needed for a party is a group of friends, enough alcohol to get the "right" intoxication and music.

''It is very sad as a parent to see a child below 18 years lose direction very early in life because of alcohol. I have been dealing with a number of cases involving deterioration of academic performance for the once bright students, hooliganism, rebellion and teen pregnancies. Going by the cases we handle and what we see happen elsewhere, underage drinking is a time bomb of some sort waiting to explode unless something is urgently done.''…… Guiding and Counselling Head, Murang'a.

Cases of students appearing in school drunk were also reported by school captains in both Kajiado and Murang'a. Although cases of underage drinking were reported in both genders, they were more common among boys compared to girls. The amount of alcohol mentioned in the interviews differs but drinking equal to less than one drink to two drinks of strong alcohol. The favourite types of alcohols were spirits, followed by wines (for girls) and then beers.

Drinking was mainly done on some evenings after preps and during afternoons of most weekends by both boys and girls. In a few instances, the respondents most of them school captains mentioned cases of students found with alcohol on the school compound during random inspection episodes.

'*I know a number of young people my age in day-schools in this ward, who attend night clubs with their friends especially on Friday nights. Some of them drink like fish in water and even come to school smelling of alcohol*……. School Captain, Kajiado.

4.4.2 Alcohol use precipitating factors among the underage

The respondents highlighted that alcohol use among the underage in both Counties was as a result of a multiplicity of factors. They included: peer pressure, for fun, curiosity, self-medication (for stressed adolescents), high socio-economic status, easy availability of alcohol, low perception of harm, low neighbourhood attachment and poor parental role modelling.

''*The biggest problem we have in our generation is that alcohol is legal and sold everywhere and everybody has access to it regardless of their age. Parents have abdicated their responsibilities in upbringing and being proper role models to their children''*……School Principal, Murang'a

Lethargy and corruption on the part of law enforcement personnel coupled with erosion of family and community values under the changing times were also cited as factors responsible for the surge in cases of underage drinking.

'My friend, I can tell you, times have changed. The number of adults who will not care buying alcohol for small children is on the rise. The complaints we get show that girls are the main victims particularly when in the company of older men. Most of them go scot-free in the hands of the police. Long gone are the days when children belonged to the community and we all took responsibility in their upbringing…… Guiding and Counselling Head, Murang'a

Moreover, the law outlawing canning in schools had made students to become rebellious to authorities and in a way contributed to the increasing cases of hooliganism in schools including underage drinking.

‘‘*Since canning of students was banned in schools, it is very difficult to instil discipline and control student behaviours, leave alone drinking while on school compound, because apart from suspending them for two weeks, what else can you do?’’*……School Principal, Kajiado

The school principals from both counties also noted that poverty had a role to play in reinforcing underage drinking. According to most principals interviewed, there is need for government policy allowing free access to basic education for all as some parents cannot afford school fees for their children.

‘‘When students are send home for school fees, they became exposed to the social vices in the environment including alcohol and that is how we have lost some of our very promising students’…….....Guiding and counselling head, Kajiado

4.4.3 Institutional support structures for the affected youth.

Most of the schools had guidance and counselling departments where students with drinking problems received the first line of help. However, because drinking is outlawed for minors, very few students sought help from guidance and counselling teachers for their drinking problems. According to all the respondents from schools in the two counties, most schools lack alcohol and substance abuse policy required to guide teachers on how to handle and manage cases emanating from alcohol use.

Moreover, there is need for cooperation between teachers and parents in managing students as there was consensus that the contribution of some parents in their children’s upbringing was wanting.

‘‘It is very sad to see parents negating the essence of sharing quality time with their children. We are now witnessing a trend where parents are busy chasing money and using the very money to treat their children hooked on alcohol. Even school holidays

are not helping much as parents leave their homes very early; and coming back late when the children have already slept''. ……School Principal, Murang'a.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

In this study, the prevalence and correlates of alcohol use among underage high-school students in Murang'a and Kajiado Counties were explored. The study estimated the overall prevalence of current use of alcohol among the underage high school students at 37%. These rates are lower than those reported among adolescents in previous studies in Kenya (Atwoli, Mungla, Ndung'u, Kinoti, & Ogot, 2011; NACADA, 2010b). It is also lower than the 41.8 % reported in a comparable study in the U.S.(Eaton et al., 2010) but higher than those found in other countries such as Thailand (Assanangkornchai et al., 2009; Chaveepojnkamjorn & Pichainarong, 2009) and Zimbabwe (Siziya et al., 2009). The rates however compare well to those found in Brazil (Gomes, Alves, & Nascimento, 2010) and Seychelles (Alwan et al., 2011). These differences could be due to cultural and geographical differences which also determine availability and access to alcohol by adolescents in different countries.

Previous studies among high school students in Africa have reported prevalence rates of alcohol use that range from 15% to 57.9% (Birhanu et al., 2014; Otieno & Ofulla, 2009). The primary reason for the comparatively higher alcohol drinking level in this study could be due to high level of access to alcohol by the underage due to permissive cultures, border influence (Kajiado) and low neighbourhood attachments. Indeed, from an institutional point of view, the study found a strong association between current alcohol use and the ease of getting an adult to buy alcohol to a minor (AOR=2.1;95% CI:1.1-3.8, $p<0.05$).

Generally, male youths reported a higher prevalence (43.5%) in current use of alcohol compared to their female counterparts (26.3%). This finding compares well to that of previous studies done in Ethiopia and Thailand (Birhanu et al., 2014;

Pichainarong & Chaveepojnkamjorn, 2010). This gender difference may be attributable to socio-cultural norms that encourage boys to engage in alcohol use while discouraging girls to engage in the same (Reddy, Resnicow, Omardien, & Kambaran, 2007). The study thus corroborates previous findings by Birhanu et al., (2014) in the sense that underage drinking is significantly associated with male gender.

From an individual point of view, the study established an association between alcohol use and indulgence in dangerous and risky behaviours including cigarette use (AOR=4.3; 95% CI: 2.0-9.8, $p<0.05$); marijuana smoking (AOR=5.2; 95% CI: 1.4-24.9, $p<0.05$) and sexual experience with multiple partners (AOR = 1.5; 95% CI:1.1-2.1, $p< 0.05$). This finding is in concordance with previous studies done in Zimbabwe by Siziya et al., (2009) and the findings of systematic review by Saban and Flisher (2010). There is need to diffuse this trends as these risky behaviour could escalate as youths transition to adult life (DeWit et al., 2000).

The study also established that current use of alcohol increased with age in Murang'a County, and thus seem to concur with some similar studies done in the past (Alwan et al., 2011; Chaveepojnkamjorn & Pichainarong, 2010). This against the backdrop of increasing debate regarding the question of when is the right time for the young people to start using alcohol (DeWit et al., 2000; Hingson et al., 2008; Merline, Jager, & Schulenberg, 2008). Notably, the average age of onset of drinking was much lower, at 12.28 years ± s.d. 3.1. The ever decreasing age of onset of alcohol use has been a cause for concern for policy and public health experts in the recent past considering the harms caused by alcohol to young people (Eaton et al., 2010; Livingston, 2008; Ofulla, 2009; Otieno & Ofulla, 2009). This early debut to alcohol among the minors is worrisome since it is known to be associated with a high risk for alcohol abuse and dependence in later years (DeWit et al., 2000). A recent systematic review indicates that later adolescence drinking could progress into late adulthood drinking habits, and it was also associated with suicide, car crashes and mental and social problems (McCambridge et al., 2011). Currently, a legal age limit for drinking exists in Kenya but there could be poor enforcement of the said laws. This is

expected ‘given the infectious disease focus of health authorities in developing countries’(Reda, Moges, Wondmagegn, & Biadgilign, 2012) .

Unlike previous studies linking lack of school attendance and being bullied (Alwan et al., 2011; Assanangkornchai et al., 2009; Chaveepojnkamjorn & Pichainarong, 2011; Siziya et al., 2009) to alcohol consumption among adolescents, only lack of school attendance was associated with current use of alcohol among the underage high-school students in this study.

Like other studies (Alwan et al., 2011; Assanangkornchai et al., 2009; Chaveepojnkamjorn & Pichainarong, 2011; Peltzer, 2009; Saban & Flisher, 2010; Siziya et al., 2009), the present study found an association between current use of alcohol and psychosocial distress symptom of anxiety [AOR = 1.73; 95% CI 1.08, 2.78]. The present study did not however establish a link between current use of alcohol and other psychosocial distress symptoms such as suicidal ideation and loneliness among underage high school students in both Murang’a and Kajiado County.

Unlike previous studies however that have shown an association between adolescent alcohol use and the influence of family and significant others (Birhanu et al., 2014; Chaveepojnkamjorn & Pichainarong, 2007, 2009; Merline et al., 2008), peers’ drinking status (Chaveepojnkamjorn & Pichainarong, 2007; Mundt, 2011), alcohol expectancies (Schulte et al., 2009) and academic performance (Chaveepojnkamjorn & Pichainarong, 2009), the present study only revealed the association between underage drinking and alcohol expectation of feeling happy. This could be due to underreporting in the present study.

Finally, in this study, lack of parental or guardian connectedness to the underage high-school students was not associated with alcohol use as previously reported (Alwan et al., 2011; Peltzer, 2009; Siziya et al., 2009). This observation could have been caused by lower power arising from smaller numbers reporting positive for these variables.

5.2 Conclusion

- The study estimated overall prevalence of current use of alcohol among underage high-school students at 37%. Prevalences of 37.6% and 35.6% were recorded in Murang'a and Kajiado respectively. Current use of alcohol was more prevalent among male students (43.6%) compared to their female counterparts (26.3%).
- Overall, individual level factors associated with current use of alcohol were: male gender, cigarette use; missing school and psychosocial distress (worries). In Murang'a County, individual-level factors associated with underage alcohol use included: older age, having multiple sexual partners, cigarette use, missing school and psychosocial distress (worries). In Kajiado County, individual-level factors associated with underage alcohol use included: alcohol expectation (feel relaxed) and bhang use.
- Institutional-level factors associated with underage alcohol use were: ease of getting an adult to buy alcohol in Murang'a County and being unsure of being caught by Police in Kajiado County.

5.3 Recommendations

- There is need for sensitization programs for underage high-school students on risk-reduction strategies involving alcohol use with a key focus on primary prevention.
- An identification and referral system for alcohol-dependent students be instituted so as to ensure rehabilitation of all affected students.
- The County and school management systems should strive to create an atmosphere that minimizes access to alcohol and drugs by underage students while in school and outside school particularly during sporting events away from school.
- From a public health-health perspective, there is need to broaden the alcohol use health promotion message among underage school-going children to also include other problem behaviours identified in the study such as tobacco & marijuana use and risky sexual activity with an emphasis on the male child.

- Need for another study to look at the influence of boarding vs day schools on underage drinking as well as explore avenues on how alcohol enters schools to reach the underage students.

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APPENDICES

Appendix 1: Consent form

Introduction:

I Patrick Okwarah is a postgraduate student at Jomo Kenyatta University of Agriculture and Technology and College of Health Sciences (COHES). I'm undertaking a study on Factors associated with underage alcohol use: A case study of public secondary schools in Murang'a and Kajiado Counties, Kenya. This study wishes to determine the prevalence and predictors of underage alcohol use in selected high schools in Murang'a and Kajiado Counties.

Benefits:

There will not be any direct benefits; financial or otherwise. BUT as the saying goes, "A healthy Nation is a wealthy Nation". The indirect benefits may be realized wholesomely by all Kenyans if our young generation is free from alcohol.

Risks:

There are no risks associated with this study. The study simply involves responding to a questionnaire on the knowledge and/or practice on alcohol.

Confidentiality:

All the information you give will be held in total confidence. It will only be used for the purposes of this study.

Acceptance:

If you are willing to participate in this study, please sign this consent form

I have been explained the kind of study and am willing to participate:

…… …….

Signature (Participant) Name & Signature (Interviewer)

If you have any question, please consult:

Patrick Okwarah Prof Simon Karanja Prof. Nicholas K. Gikonyo

JKUAT Project Supervisor, COHES, JKUAT Chair, KU Ethics Review Committee

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Appendix 2: Survey Questionnaire

This survey is about your health and the things you do that may affect your health. Students like you in Kajiado county are doing this survey. The information you give will be used to develop better health programs for young people like yourself. ***DO NOT write your name*** *on this survey or the answer sheet. The answers you give will be kept* ***private.*** *No one will know how you answer. Answer the questions based on what you really know or do. There are no right or wrong answers. Completing the survey is* ***voluntary****. Your grade or mark in this class* ***will not be*** *affected by how you answer the questions. Make sure to read every question. Tick the answer that match your answer by use of a pencil. When you are done, do what the person who is giving you the survey*

	QUESTIONS	***RESPONSES***	***Tick***
1a	**County**	Murang'a…… Kajiado……..	1 2
b	**District/Region**	Murang'a Urban…….. Murang'a Rural…… Kajiado Urban……. Kajiado Rural……	1 2 3 4
c	**Sub location/Name of school**		
d	**Gender**	Male …… Female……	1 2
e	Year of Birth		
f	Religion	Christian……. Muslim……. Buddhists…… Traditionalist……. Others (specify)……..	1 2 3 4 5
g	In what class/standard are you?	F1 F2 F3 F4s	1 2 3 4

A	**Alcohol use patterns: The next 8 questions ask about drinking alcohol. This includes drinking beer, chang'aa, Muratina, Konyagi, Esukuroi. Drinking alcohol does not include drinking a few sips of wine for religious purposes. A "drink" is a glass of wine, a bottle of beer, a small glass of liquor, or a mixed drink**		
1	How old were you when you had your first drink of alcohol other than a few sips?	I have never had a drink of alcohol other than a few sips I was ……years old.	0 1
2	During the past 30 days, on how many days did you have at least one drink containing alcohol?	0 days 1 or 2 days 3 to 5 days 6 to 9 days 10 to 19 days 20 to 29 days All 30 days	0 1 2 3 4 5 6
3	During the past 30 days, on the days you drank alcohol, how many drinks did you usually drink per day?	I did not drink alcohol during the past 30 days Less than one drink 1 drink 2 drinks 3 drinks 4 drinks 5 or more drinks	0 1 2 3 4 5 6
4	Thinking about the **last time** you drank alcohol, how did you obtain the alcohol at that time? SELECT ONLY ONE RESPONSE	I have never drunk alcohol I bought it in a store, shop, or from a street vendor I gave someone else money to buy it for me I got it from my friends I got it from my family I stole it or got it without permission I got it from home with my parents' permission I got it from home without my parents' permission I got it some other way	0 1 2 3 4 5 6 7 8
5	Staggering when walking, not being able to speak right, and throwing up are some signs of being really drunk. **During your life, how many times did you**	0 times 1 or 2 times to 9 times 10 or more times	0 1 2 3

	drink so much alcohol that you were really drunk?		
6	During the past 30 days, how many times did you drink so much alcohol that you were really drunk?	0 times 1 or 2 times 3 to 9 times 10 or more times	0 1 2 3
7	During the last 3 months, how many times have you got into trouble with your family or friends, missed school, or got into fights, as a result of drinking alcohol?	0 times 1 or 2 times to 9 times 10 or more times	0 1 2 3
8	Where were you the last time you had a drink of alcohol?	I have never had a drink of alcohol At home At someone else's home At school Out on the street, in a park, or in some other open area At a bar, pub, or disco In a restaurant At a sporting event (not at school) Some other place such as……..	0 1 2 3 4 5 6 7 8
B	**Psychosocial distress: The next 9 questions ask about your feelings and friendships**		
1	During the past 30 days, how often have you felt lonely?	Never Sometimes Always	0 1 2
2	During the past 30 days, how often have you felt worried about something that you could not sleep?	Never Sometimes Always	0 1 2
3	During the past 30 days, how often have you had a hard time staying focused on your homework or other things you had	Never Sometimes Always	0 1 2

	planned to do?		
4	How satisfied are you with your current academic grades ?	Very satisfied Somehow satisfied Not satisfied	0 1 2
5	During the past 30 days, how often have you been so worried about something that you wanted to use alcohol or other drugs to feel better?	Never Sometimes Always	0 1 2
6	During the past 6 months, did you ever consider attempting suicide?	No Yes	0 1
7	During the past 6 months, did you make a plan about how you would attempt suicide?	No Yes	0 1
8	During the past 6 months, how many times did you attempt suicide?	0 times 1 time 2 or 3 times 4 or 5 times 6 or more times	0 1 2 3 4
9	How many close friends do you have?	0 1 2 3 or more	0 1 2 3
C	**Institutional Factors**		
1	During the past 30 days, on how many days did you miss classes or school without permission?	0 days 1 or 2 days 3 to 5 days 6 to 9 days 10 or more days	0 1 2 3 4
2	During the past 30 days, how often were most of the students in your school kind and helpful?	Never Sometimes Always	0 1 2

3	During the past 30 days, how often did your parents or guardians check to see if your homework was done?	Never Sometimes Always	0 1 2
4	During the past 30 days, how often did your parents or guardians seek to understand your problems and concerns?	Never Sometimes Always	0 1 2
5	During the past 30 days, how often did your parents or guardians know what you were doing with your free time?	Never Sometimes Always	0 1 2
6	During the past 30 days, how often did your parents or guardians go through your things without your approval?	Never Sometimes Always	0 1 2
D	**Sexual Behaviours: The next 5 questions ask about sexual behaviours.**		
1	Have you ever had sexual intercourse?	No Yes	0 1
2	How old were you when you had sexual intercourse for the first time?	I have never had sexual intercourse I was…….Years old	0 1
3	During your life, with how many people have you had sexual intercourse?	I have never had sexual intercourse 1 person 2 people 3 people 4 people 5 people 6 or more people	0 1 2 3 4 5 6
4	The **last time** you had sexual intercourse, did you or your partner use a condom	I have never had sexual intercourse No Yes	0 1 2

5	The **last time** you had sexual intercourse, did you or your partner use any method of birth control, such as withdrawal, rhythm, birth control pills, or any other method to prevent pregnancy?	I have never had sexual intercourse Yes No I do not know	0 1 2 3
E	**Tobacco Use: The next 7 questions ask about cigarette and other tobacco products**		
1	How old were you when you first tried a cigarette?	I have never smoked cigarettes I was …….years old	0 1
2	During the past 30 days, on how many days did you smoke cigarettes?	0 days 1 or 2 days 3 to 5 days 6 to 9 days 10 to 19 days 20 to 29 days All 30 days	0 1 2 3 4 5 6
3	During the past 30 days, did you use any tobacco products other than cigarettes	No Yes	0 1
4	If the answer to the previous question is yes, which ones?	……	
5	During the past 12 months, have you ever tried to stop smoking cigarettes?	I have never smoked cigarettes I did not smoke cigarettes during the past 12 months Yes No	0 1 2 3
6	During the past 7 days, on how many days have people smoked in your presence?	0 days 1 or 2 days 3 or 4 days 5 or 6 days All 7 days	0 1 2 3 4

7	Which of your parents or guardians use any form of tobacco?	Neither My father or male guardian My mother or female guardian Both I do not know	0 1 2 3 4
F	**Marijuana use patterns: The next 4 questions ask about marijuana use.**		
1	How old were you when you first used bhang/marijuana?	I have never used drugs…… I was ……years old	0 1
2	During the past 30 days, how many times have you used bhang (also called marijuana, weed or stone)?	0 times 1 or 2 times 3 to 9 times 10 to 19 times 20 or more times	0 1 2 3 4
3	During the past 12 months, how many times have you used marijuana (also called bhang, weed or stone)?	0 times 1 or 2 times 3 to 9 times 10 to 19 times 20 or more times	0 1 2 3 4
4	How difficult do you think it would be for you to get bhang (also called marijuana, weed or stone) if you wanted to?	Impossible Very difficult Fairly difficult Fairly easy Very easy I do not know	0 1 2 3 4 5
G	**The next 2 questions ask about bullying.**		
1	During the past 30 days, on how many days were you bullied?	0 days 1 or 2 days 3 to 5 days 6 to 9 days 10 to 19 days 20 to 29 days All 30 days	0 1 2 3 4 5 6
2	During the past 30 days, how were you bullied most often?	I was not bullied during the past 30 days I was hit, kicked, pushed, or locked indoors I was made fun of because of my ethnicity/colour I was made fun of because of my religion	0 1 2 3 4

		I was made fun of with sexual jokes, or gestures I was left out of activities on purpose or fully ignored I was made fun of with how my body or face looks I was bullied in some other way e.g.……..	5 6 7 8
H	**Violence and Unintentional Injury:** The next question asks about physical attacks. A physical attack occurs when one or more people hit or strike someone, or when one or more people hurt another person with a weapon (such as a stick, knife, or gun). It is not a physical attack when two students of about the same strength or power choose to fight each other.		
1	During the past 12 months, how many times were you physically attacked?	0 times 1 time 2 or 3 times 4 or 5 times 6 or 7 times 8 or 9 times 10 or 11 times 12 or more times	0 1 2 3 4 5 6 7
	The next question asks about physical fights. A physical fight occurs when two students of about the same strength or power choose to fight each other**.**		
2	During the past 12 months, how many times were you in a physical fight?	0 times 1 time 2 or 3 times 4 or 5 times 6 or 7 times 8 or 9 times 10 or 11 times 12 or more times	0 1 2 3 4 5 6 7
	The next 3 questions ask about <u>serious injuries</u> that happened to you. An injury is serious when it makes you miss at least one full day of usual activities (such as school, sports, or a job) or requires treatment by a doctor or nurse.		
3	During the past 12 months, how many times were you seriously	0 times 1 time 2 or 3 times	0 1 2

	injured?	4 or 5 times 6 or 7 times 8 or 9 times 10 or 11 times 12 or more times	3 4 5 6 7
4	During the past 12 months, what was the most serious injury that happened to you?	I was not seriously injured during the past 12 months I had a broken bone or a dislocated joint I had a cut or stab wound I had a concussion or other head or neck injury, I was knocked out, or could not breathe I had a gunshot wound I had a bad burn I was poisoned or took too much of alcohol/drugs Something else happened to me	0 1 2 3 4 5 6 7 8
5	During the past 12 months, what was the major cause of the most serious injury that happened to you?	I was not seriously injured during the past 12 months I was in a motor vehicle accident or hit by a vehicle I fell Something fell on me or hit me I was attacked, abused or was fighting with someone I was in a fire or too near a flame or something hot I inhaled or swallowed something bad for me Something else caused my injury	0 1 2 3 4 5 6 7

I	**General questions**									
1.	On the average, about how often did you have one or more **whole drinks** of each of the following alcoholic beverages during the **past 6 months**? (If "not at all," check the box under "**NOT AT ALL**.")									
		0 Not At All	**1** 1-2 times in the past 12months	**2** 3-5 times in past 12 months	**3** 6-10 times in the past 12 months	**4** About once a month	**5** 2-3 times a month	**6** 1–2 times a week	**7** several times a week	**8** Daily
a	Beer									
b	Spirits									
c	Wine									
d	Chang'aa									
e	Muratina									
f	other									

2.	On how many days in the **past 6 months** did you have **5 or more whole drinks** in a row?	NONE 1–2 DAYS 3–4 DAYS 5–6 DAYS 7–8 DAYS 9–10 DAYS 11–12 DAYS 13–15 DAYS 16–20 DAYS MORE THAN 20 DAYS	1 2 3 4 5 6 7 8 9 10

3	How often in the **past 6 months** have you:	**0** Never	1 once	**2** 2-3 times	**3** 4-5 times	**4** 6-9 times	**5** 10 or More times
1	Missed school or class because of drinking						
2	Gotten sick to your stomach because of drinking?						
3	Been drunk while at school						
4	Not been able to remember what happened while you						
5	Passed out while drinking?						

6	Had a hangover?						
7	Regretted something you did						
8	Got into trouble with your						
9	Worried that you drank too much or too often?						
10	Done poorly in school						
11	Been arrested because you used alcohol						
12	Driven under the influence of alcohol						
13	Been a passenger in a vehicle in which the driver was under the influence of alcohol						
14	Been drunk at a party						
15	Had an injury because you used alcohol						
4	Suppose you wanted to get each of the following beverages. How easy or difficult do you think it would be for you to get each one? (Just check one box under your choice for each beverage.)	**0** Very Difficult		**1** Difficult	**2** Unsure	**3** Easy	**4** Very easy
1	BEER						
2	SPIRITS						
3	WINE						
4	CHANG'AA						
5	LIQUOUR						
6	OTHER						
	AVAILABILITY OF ALCOHOLIC BEVERAGES						
5	If you wanted to, how easy or difficult would it be for you to get someone you didn't know who was over 18 years old to buy alcohol for you? Very difficult Difficult Unsure Easy Very easy						1 2 3 4 5

6	How likely or unlikely do you think it is that you would get caught by the police if you tried to buy alcohol?	
	Very likely	1
	Likely	2
	Unlikely	3
	Very unlikely	4
7	In the past 6 months, did you buy alcoholic beverages at any of the following places? (Check all that apply	
	Grocery store or supermarket	1
	Liquor store	2
	Convenience store	3
	Gas station	4
	Bar or pub	5
		6
		7
		8
	COMMUNITY NORMS	

8	How often do you think each of the following people had at least a drink of alcohol during the past 6 Months?	Not at all	1–2 times in the past 6 months	3–5 times in the past 6 months	6–10 times in the past 6 months	About once a month	2–3 times a month	1–2 times a week	Several times a week	Every day
	Mother, stepmother, or female guardian									
	Father, stepfather, or male guardian									
	Most other adults you know									
	Best friend									

	Your other good friends									
	Other people your age you know									

9	On a scale of 1-5, How much do you think the following people would disapprove or approve if you were to go drinking?	**1** Disapprove strongly	**2** Disapprove	**3** Neutral	**4** Approve	**5** Approve strongly
1	Mother, stepmother, or					
2	Father, stepfather, or					
3	Most other adults you					
4	Best friend					
5	Your other good friends					
6	Other people your age					

10	How wrong would most adults in your neighborhood, or the area around where you live, think it is for kids your age to :	**1 Not wrong at all**	**2 A little bit wrong**	**3 Wrong**	**4 Very wrong**
a	**DRINK ALCOHOL?**				
b	**GET DRUNK?**				
11	How many times in the last two months has someone offered to give you, buy for you, or sell you alcohol?	**0** None	**1** Once	**2** 2-3times	**3** 4 or more times

12	How often in the past 12 months have your parents talked with you about :	**0** NEVER	**1** 1–2 TIMES	**2** 3–4 TIMES	**3** 5–6 TIMES	**4** MORE THAN 6 TIMES
a	Not drinking alcohol?					

b	Not driving after drinking?					
c	Not riding with a drunk					
d	Not going to parties where					
13	How likely or unlikely is it that you would be caught by your parents if you were to do each of the following?		**3** Very likely	**2** Somewhat likely	**1** Somewhat unlikely	**0** Very unlikely
a	Drank alcohol?					
b	Drove after drinking?					
c	Rode with a driver who had been					
d	Went to a party where alcohol was					

14	**ALCOHOL EXPECTATIONS** In your opinion, how **likely or unlikely** is it that each of the following things would happen to you personally **if you** were to	**3** Very likely	**2** Somewhat likely	**1** **S**omewhat unlikely	**0** Very unlikely
a	Feel relaxed?				
b	Get into trouble with the police?				
c	Feel more confident or sure of yourself?				
d	Harm your health?				
e	Feel happy?				
f	Get a hangover?				
g	Have an easier time expressing				
h	Do something you'd regret?				
i	Feel sick to your stomach?				

Perception of Alcohol Use by Other People

15	Most people, my age who drink, do so because… (Check all that apply)	They want to have a good time at a party They are sad/depressed and want to feel better about themselves They wish to rebel and defy their parents, teachers and other authorities They wish to fit in or be accepted by their friends or peers They are bored	1 2 3 4 5

b	Do you think alcohol use by underage youth is	Serious problem Not at all a problem Minor problem	1 2 3
c	Within the past year, do you think heavy use of alcohol among people your age has:	Increased Decreased Stayed the same	1 2 3
d	Who is responsible for contributing to the problem of alcohol use by youth under age 18? (Check all that apply)	Parents Public agencies Alcohol outlets, such as liquor stores, bars and restaurants Advertising Youth themselves Other (write in) Don't know	1 2 3 4 5 6 7
e	Do you think drinking and driving among youth is a…	Serious problem Minor problem Not at all a problem	1 2 3
f	Do you know someone with an	Yes No	1 2
g	If the response to the previous question was "Yes," what was their relationship to you?	Relative Non-relative (e.g., friend or acquaintance)	1 2
h	Where is the primary source where people under the age of 18 obtain alcohol? (Select only one)	Parent's home Liquor store Bar/restaurant Supermarket Grocery/convenience store Friends/relatives Other	1 2 3 4 5 6 7

i	Which of the following approaches would you support to decrease alcohol use by youth under the legal drinking age of 18? (Check all that apply)	New and/or stiffer penalties More law enforcement More alcohol education in schools More alcohol education in the mass media (TV, radio, magazines) Alcohol-free teen night clubs Public presentations by people seriously hurt or impaired by alcohol Driver's license suspension for youth who drink alcohol Ban on alcohol advertising	1 2 3 4 5 6 7 8

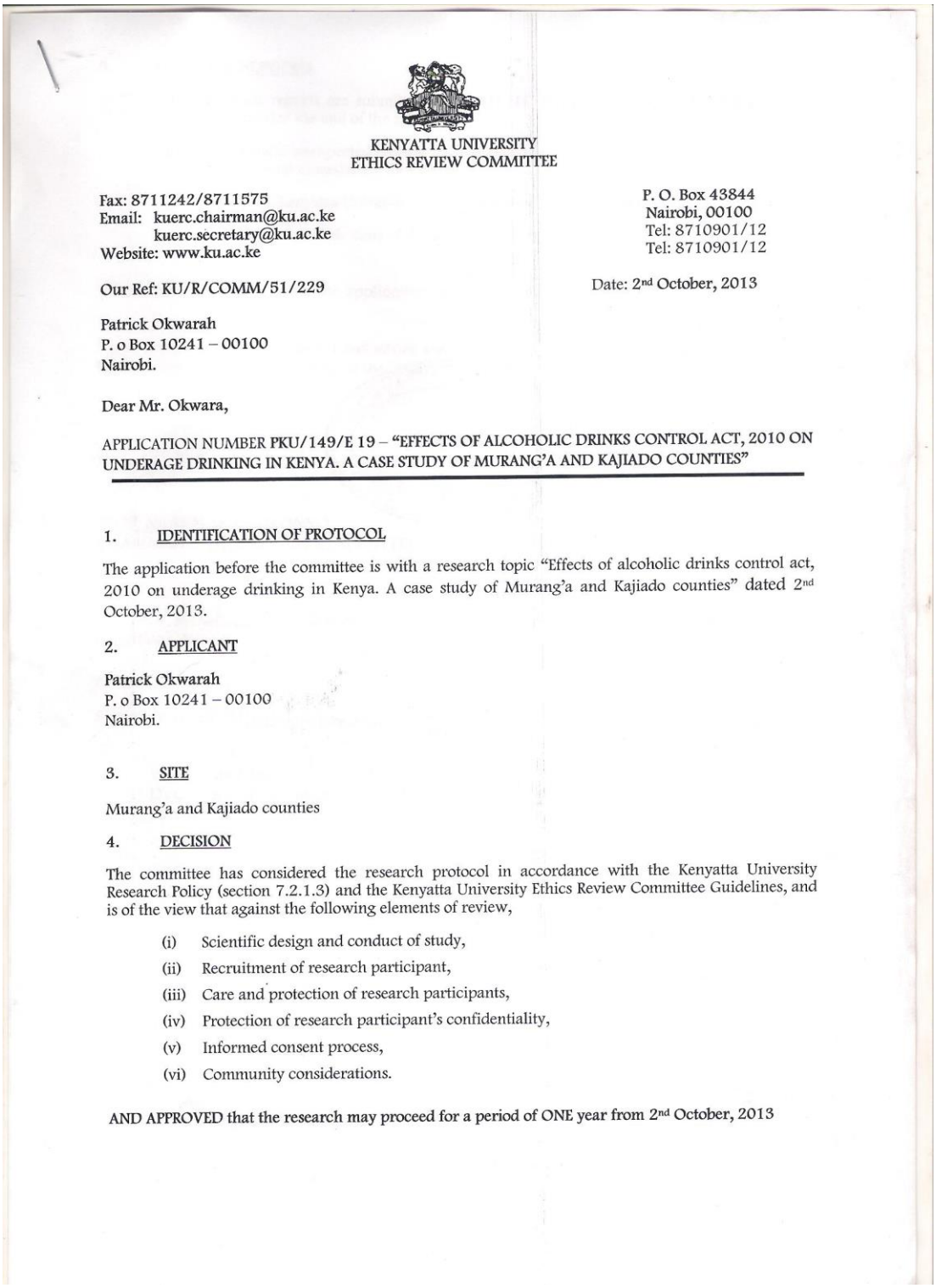
Appendix 3: Key Informant Interview Guide

Name: _____ Department: _____

School: _____ **Designation**: _____

1) What is your opinion regarding alcohol abuse by underage in this county/school?
2) Name the types of alcohol abused by underage in this county?
3) What are the main factors that make the underage to use alcohol?
4) Considering male and female underage students, who are taking more alcohol and why?
5) What are the effects of alcohol abuse you have witnessed among the underage in this school/county?
6) What intervention programs exit in schools to curb alcohol abuse?
7) Are there any barriers on access to treatment by the minors in this school/county?
8) What role has this county played in preventing alcohol abuse among minors in schools?
9) Do schools in this county have an alcohol policy?

Appendix 4: Ethics Approval Letter



KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844
Nairobi, 00100
Tel: 8710901/12
Tel: 8710901/12

Our Ref: KU/R/COMM/51/229

Date: 2nd October, 2013

Patrick Okwarah
P. o Box 10241 – 00100
Nairobi.

Dear Mr. Okwara,

APPLICATION NUMBER PKU/149/E 19 – "EFFECTS OF ALCOHOLIC DRINKS CONTROL ACT, 2010 ON UNDERAGE DRINKING IN KENYA. A CASE STUDY OF MURANG'A AND KAJIADO COUNTIES"

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic "Effects of alcoholic drinks control act, 2010 on underage drinking in Kenya. A case study of Murang'a and Kajiado counties" dated 2nd October, 2013.

2. APPLICANT

Patrick Okwarah
P. o Box 10241 – 00100
Nairobi.

3. SITE

Murang'a and Kajiado counties

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

(i) Scientific design and conduct of study,
(ii) Recruitment of research participant,
(iii) Care and protection of research participants,
(iv) Protection of research participant's confidentiality,
(v) Informed consent process,
(vi) Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 2nd October, 2013

5. ADVICE/CONDITIONS

i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.

ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.

iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.

iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

KENYATTA UNIVERSITY OFFICE OF THE SECRETARY -2 OCT 2013 ETHICS REVIEW COMMITTEE P.O. BOX 43844 - 00100 NAIROBI

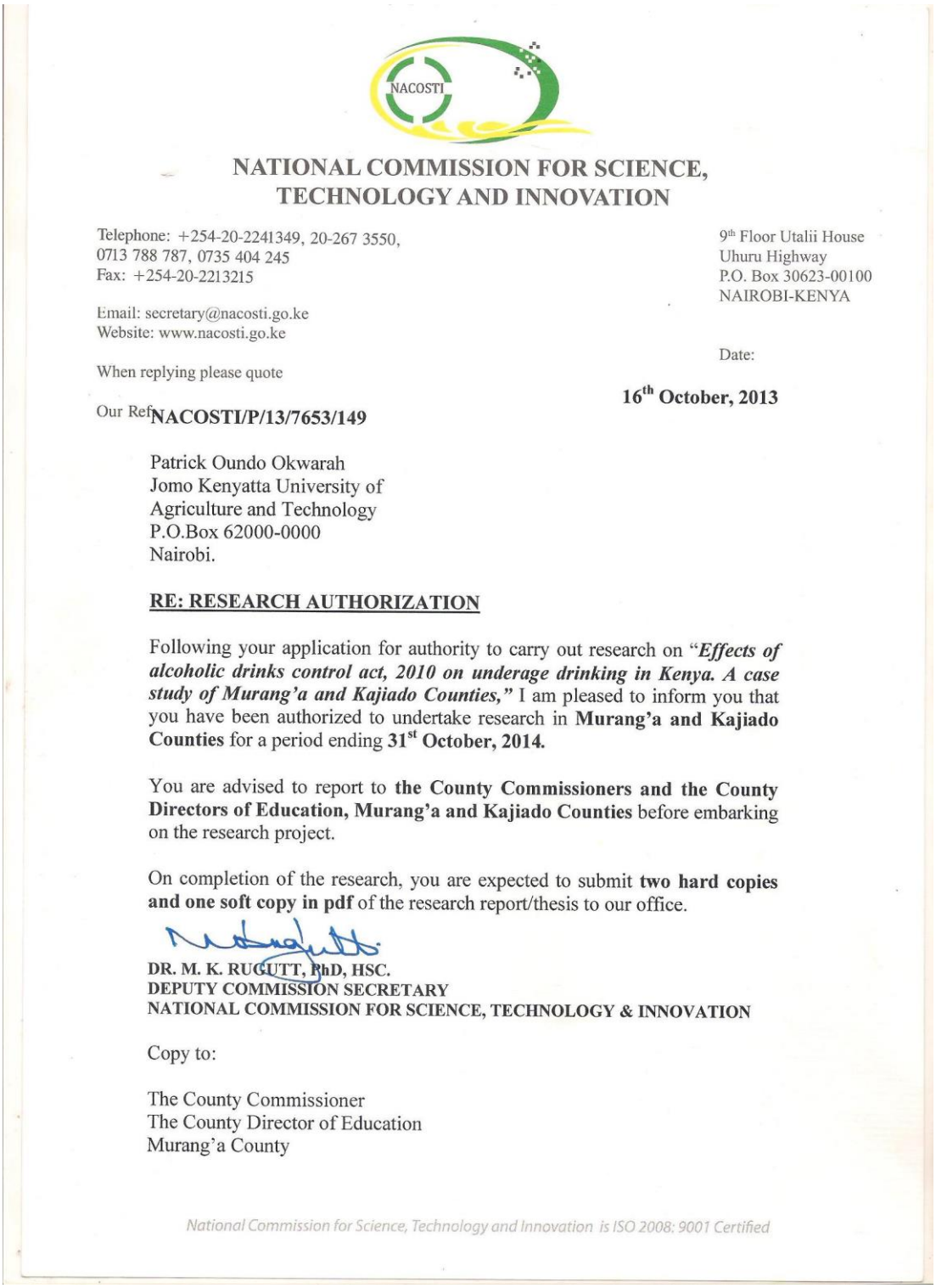
PROF. NICHOLAS K. GIKONYO
CHAIRMAN ETHICS REVIEW COMMITTEE

I ...PATRICK...O:...OKWARA H... accept the advice given and will fulfill the conditions therein.

Signature..... Dated this day of...3RD OCTOBER,..... 2013.

cc. Vice-Chancellor
DVC: Research, Innovation and Community Outreach.
Director: Institute for Research Science and Technology

Appendix 5: NACOSTI Research Permit



NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2241349, 20-267 3550,
0713 788 787, 0735 404 245
Fax: +254-20-2213215

Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke

When replying please quote

Our Ref **NACOSTI/P/13/7653/149**

9th Floor Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Date:

16th October, 2013

Patrick Oundo Okwarah
Jomo Kenyatta University of
Agriculture and Technology
P.O.Box 62000-0000
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "***Effects of alcoholic drinks control act, 2010 on underage drinking in Kenya. A case study of Murang'a and Kajiado Counties,"*** I am pleased to inform you that you have been authorized to undertake research in **Murang'a and Kajiado Counties** for a period ending **31st October, 2014.**

You are advised to report to **the County Commissioners and the County Directors of Education, Murang'a and Kajiado Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COMMISSION SECRETARY
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Copy to:

The County Commissioner
The County Director of Education
Murang'a County

National Commission for Science, Technology and Innovation is ISO 2008: 9001 Certified

The County Commissioner
The County Director of Education
Kajiado County.

Appendix 6: Conference Participation Certificate 1

KBS 2015
MUNICH
1. - 5. JUNE

Kettil Bruun Society

CERTIFICATE OF PARTICIPATION

This is to certify that

Mr. Patrick Okwarah
College of Health Sciences
Jomo Kenyatta University of Agriculture and Technology
Nairobi / Kenya

has attended the

41st Annual Alcohol Epidemiology Symposium of the Kettil Bruun Society

June 1-5, 2015

Munich, Germany

He presented the paper

"Prevalence and factors associated with alcohol use among under-age high-school students in Murang'a and Kajiado Counties, Kenya" in the session "Youth drinking".

Prof. Dr. Ludwig Kraus, Chairman

Gefördert durch:

Bundesministerium für Gesundheit

aufgrund eines Beschlusses des Deutschen Bundestages

gefördert durch
Bayerisches Staatsministerium für Gesundheit und Pflege

Appendix 7: Conference Participation Certificate 11

KBS 2016
STOCKHOLM 30 MAY - 3 JUNE

Kettil Bruun Society
Social and Epidemiological Research on Alcohol

CERTIFICATE OF PARTICIPATION

This is to certify that

Mr Patrick Okwarah

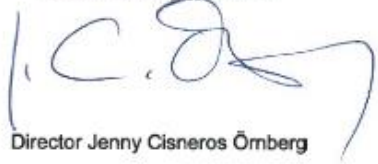
has attended and presented at the

42nd Annual Alcohol Epidemiology Symposium

of the Kettil Bruun Society

30 May- 3 June, 2016

Stockholm, Sweden



Director Jenny Cisneros Örnberg

Stockholm University

C·A·N

Appendix 8: Abstract of Published Paper

Researchjournali's Journal of Public Health
Vol. 1 | No. 6 July | 2015

Prevalence And Correlates Of Alcohol Use Among Underage High-School Students In Murang'a And Kajiado Counties, Kenya

Patrick Okwarah
College of Health Sciences (COHES), Jomo Kenyatta University of Agriculture and Technology,
Richard Gakunju
Movement Against Substance Abuse in Africa, P.O. Box 10241-00100, Nairobi (K)
Ephantus Kabiru
School of Public health, Kenyatta University, P.O. Box 43844-00100, Nairobi (K)
Lucas Malla
Kenya Medical Research Institute, Wellcome Trust P.O.Box 43640-00100 Nairobi GPO
William Okedi
National Authority for the Campaign Against Alcohol and Drug Abuse, Nairobi (K)
Lawrence Muthami
Institute of Tropical Medicine and Infectious Diseases, Kenya Medical Research Institute
Simon Karanja
College of Health Sciences (COHES), Jomo Kenyatta University of Agriculture and Technology

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ABSTRACT

Background: Alcohol use during adolescence is an important risk factor for a host of physical and social problems affecting the young people globally. There is limited data on the prevalence of alcohol use among the underage in Kenya.

Aim: To determine the prevalence and correlates of alcohol use among underage high-school students in Murang'a and Kajiado Counties in Kenya

Methods: A random sample of 938 respondents (61.9% males and 38.1% females) below 18 years was obtained from Kajiado and Murang'a on proportionate to stratum size. A multilevel logistic regression was used to investigate potential correlates to alcohol use.

Results: The prevalence of current alcohol use was 37% and was significantly associated with being male (AOR = 1.58; 95% CI 1.40, 2.42) ;ease of getting an adult to buy alcohol (AOR=2.20; 95% CI 1.57, 3.10); cigarette use (AOR = 3.8; 95% CI 1.86, 8.28) and having multiple sexual partners (AOR =1.17; 95% 1.15, 1.20).

Conclusion: There is a high prevalence of underage alcohol use in Murang'a and Kajiado. A joint program targeting parents and teachers could be initiated so as to heighten the level of interventions required to avert further escalation of the problem.

Keywords: Prevalence, underage, alcohol use, correlates

1. INTRODUCTION

Alcohol use is a significant contributor to the global burden of disease and injury among individuals aged 10-24 years (Gore et al., 2011). Although adolescence is a critical phase for establishing key foundations for adult life, it is also the period that many undesirable habits including problem alcohol use are initiated and established with serious ramifications on the quality of health in later years (WHO, 2014).

According to the WHO's 'Health for the World's Adolescents report' (2014) an estimated 1.3 million deaths occurred in 2012, most of them from preventable causes including alcohol use. The report goes on to state that mortality was higher in boys and in older adolescents (15–19 years) than in the younger group (10–14 years).

In a recent WHO's ' Global Status Report on Alcohol and Health' (2014), monthly heavy episodic drinking is now more prevalent among young people aged 15–19 years (11.7%) than among the total population aged 15 years or older (7.5%) . Yet there exists a positive association between early debut to alcohol use and problematic drinking in adult years (Nixon and McClain 2010). Previous studies by Bonnie and O'Connell,