PREVALENCE AND FACTORS ASSOCIATED WITH SUBSTANCE ABUSE BY STUDENTS IN MEDICAL TRAINING COLLEGES IN SOUTH NYANZA REGION, KENYA

BY

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DECLARATION

I, Kurui D. Kipchumba, declare that this thesis is my original work and has not been presented to any other university or college for academic purposes.

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Declaration by the Supervisors

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

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DEDICATION

To my wife Purity Chumba for her moral support; our children Jeptoo, Kiborek and Cherutich; to my dad and mum (the late Chepkurui Somoei Chesire and Tarkok Somoei) for inculcating in me the spirit of hard work.

ABSTRACT

Substance abuse is a worldwide public health challenge. Globally, 210 million people abuse drugs resulting in approximately 263,000 deaths annually. An estimated 10-15 % of medical students risk substance abuse in their lifetime as they are not immune to the predisposing factors associated with the abuse. Substance abuse by students in medical training colleges (MTCs) may impact negatively on their health, future professional conduct and consequently, safety of patients. In Kenya, substance abuse is prevalent among youth in secondary and tertiary institutions including those in MTCs, though data on substance abuse by students in MTCs in Kenya is scanty making the magnitude of the problem unclear. South Nyanza, the study area lies within marijuana transit route along Kisii - Migori road from Tanzania to Nairobi, Kenya. Risk potential evaluation would inform appropriate intervention. This was a cross-sectional study aimed at assessing the prevalence and factors associated with substance abuse by students in MTCs in South Nyanza Region. All the five colleges in the region were included in the study. A sample of 303 respondents was selected from a total population of 1950 students using stratified random sampling method. Self-administered questionnaires were used to collect on substance abuse. Descriptive statistics in percentages was used to determine prevalence of substance abuse. Chi-square tested for independence of variables and logistic regression analysis was used to test the association between selected variables. Odds ratio was calculated to determine the strength of associations between selected variables. It was established that the respondents who have ever used at least one substance were 52.5%. The study further established that those who have ever used and who sustained use of the substances respectively were as follows: alcohol 52.5%, 27.4%; tobacco 12.2%, 2.6%; khat 17.5%, 3.6% and marijuana, 9.2%, 2.0%. Sex was found to be associated with substance abuse amongst the students. Females were 54% (OR=0.46, P=0.001) less likely to use any of the substances compared to the males. The respondents who attended religious activities several times a week were also 78% (OR=0.22, P=0.007) less likely to abuse any of the substances. Besides, the respondents who perceived high stress were 3.64 (OR=3.64, P=0.045) times more likely to drink alcohol compared with those who perceived no stress. Nearly half (47.2%) of the respondents participated in sports, those participating in choir were 78% (OR=0.22, P=0.001) less likely to use alcoholic drinks compared with those who participated in sporting activities. The study established the most abused/ used substance was alcohol. Others were tobacco, marijuana, *kuber* and *shisha*. It is suggested that participation in religious activities and extracurricular activities such as choir by students of MTCs could reduce the risk of substance abuse.

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ABBREVIATIONS

AACP	-	American Association of Colleges of Pharmacy
ADA	-	Alcohol and Drug Abuse
AIDS	-	Acquired Immunodeficiency Syndrome
BCC	-	Behaviour Change Communication
CDC	-	Centre of Disease Control
FDA	-	Federal Drug Agency
HIV	-	Human Immune Virus
ICAP	-	International Center for Alcohol Policies
IDU	-	Injecting Drug Use
KMTC	-	Kenya Medical Training College
MTC	-	Medical Training College
MOH	-	Ministry of Health
NACADA	-	National Campaign Against Drug Abuse (Authority)
NCDs	-	Non-communicable Diseases
NCJ	-	National Library of Jamaica
SUD	-	Substance Abuse Disorders
SPSS	-	Software Packages for Social Scientist
UN	-	United Nations
UNODC	-	United Nations Office of Drug and Crimes
UK	-	United Kingdom
USA	-	United State of America
WHO	-	World Health Organization

OPERATIONAL DEFINITIONS

Current use: Having continual and sustained consumption of any abused substances at least once in the past 30 days (current prevalence).

Diversion: The process in which a supply of a substance recommended for one person is given, traded, or sold to someone else who is not a registered user of the said substance.

Ever use: Having consumed a substance of interested in the study (even if only once) in a lifetime, (Lifetime prevalence).

Illegal/legal drugs: Illegal drugs are substances that the government regards as unsuitable for the mental and physical well-being of an individual hence controlled or discouraged their consumption by law (illicit drugs). Legal drugs are substances that are suitable consumption and government allows by law such as alcohol and tobacco (licit drugs).

Protective factors: Factors that make substance abuse less likely.

'**Surrogate' alcohols**: Alcohol derived from medicinal compounds, automobile products, and cosmetics.

Substance: Chemical compound like alcohol, khat, cigarettes and illicit drugs that alter mood or behaviour of an individual.

Substance abuse: The use of all chemicals, drugs and industrial solvents that produce dependence (psychological and physical) and addition in an individual who take them.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Substance abuse is a major public health problem worldwide, cutting across all social strata and penetrating every part of the globe, (Njeri, 2014). It hampers socio-economic development and constitutes a major cause of increased crime, road accidents and HIV/AIDS in many countries (WHO, 2011); resulting to serious implications on individuals, community at large and by extension, students in the learning institutions (NACADA, 2012). In this predicament, the youth are the most affected (Mokua, 2012), leading to indiscipline, academic under achievements, psychiatric disorders among students in colleges (Changalwa, 2012). In addition to this, substance abuse by students in medical training colleges (MTCs) could impact negatively on their future professional conduct and efficiency, and hence the safety of patients (Rai, 2008), making substance abuse among college students and more specifically in MTCs an important area of research due to the implications of early substance dependence on the future of the health professionals.

Epidemiological reviews of substance abuse by youth have suggested that tobacco, hazardous alcohol use, and most categories of illicit drug use have shown a consistent use worldwide (Simbee, 2012), with alcohol being the commonest psychoactive substances used (Eze, 2015). Although alcohol use has been part of human societies throughout history, for the past several decades now; its prevalence has increased among the youth particularly college students (Mphele, 2013). According to World Health Organization (WHO),2012) 320,000 young people between the age of 15 and 29 die from alcohol-related causes, resulting in 9% of all deaths in that age group. MTCs fall in this group and at risk.

United Nations Office of Drugs and Crimes (UNODC) (2013) noted that global the use of heroin, cocaine and opium consumption was increasing. It was also noted that the non-medical use of prescription drugs most notably, sedatives and pain relievers which was a growing, yet unaddressed problem. The trend continues in Kenya, with one in every eight people who consumes alcohol becoming addicted, (NACADA, 2012). Other substances commonly abused in the country include tobacco, bhang (marijuana), glue and miraa (khat) (NACADA 2010), making

this a public health concern that needs to be continuously explored including in MTCs trainees who constitutes more than 80% of health care professionals in Kenya. There is variation in the prevalence of legal and illegal substance use among youth between countries with higher prevalence among youth from developed countries (Eze, 2015). Globally, it's estimated that 210 million people, an equivalent to about 5% of the global population abuse drugs each year (UNDOC, 2011). Alcohol and tobacco are legally and socially approved in the society, the challenge with this is that when used excessively and uncontrollably, they are a major threat to students' academic performance and their future (Eze, 2015). Alcohol and tobacco serves as 'gateway' to use of other substances as young people begin experimenting with them (Eze, 2015). This necessitated the need to establish the prevalence of the two and other common legal and illegal substances of abuse by students in MTCs. According to Nwadigwe (2008) of Nigeria, substance abuse is prevalent among medical students while in South Africa, it was found that 32% of medical students admitted to taking alcohol exceeding the recommended limits with 55.3% being identified as at-risk drinkers (Smit, 2009). In Kenya, though 60% of students abuse drugs (Ondieki, 2012), the information on the prevalence of substance abuse among MTCs students is still lacking.

Some of the most studied factors associated with substance use among young adults on other settings include lack of religiosity, perceived peer drug use and perceived adult drug use (Atwoli, 2011). Other factors include peer influence, mass media advertisement, gender, family history of substance abuse and parental negligence, stress, and lack of extracurricular activities (Visser, 2003). However, these are yet to be established among the students in MTCs. In other settings for example, abuse of khat was common in regions where they were grown (NACADA, 2012), while a report by the ministry of Health (2000) indicated that 67% of men and 32% of women smoked tobacoo with 45% of these being under 20 years (Ondieki, 2012). It has been noted that men generally have higher prevalence of substance abuse than females. This gender differences in substance use were more marked in some countries and regions than in others (Odeyemi, 2014).

Substance abuse is therefore a rampant problem in the Kenyan society, former Nyanza province included (NACADA, 2010), South Nyanza Region was selected because several previous reports show that the region has experienced a number of serious substance abuse problems (Otieno, 2012). Main transit route from Northern Tanzania to Nairobi Kenya, (Isibania - Migori – Kisii Highway) passes through this region. Whenever marijuana was impounded in Nyanza by law-enforcement officers, it was mostly along this route in South Nyanza Region. The marijuana impounded along this road between 2010 and 2011 was estimated at Ksh50 million (Otieno, 2012). Most of the marijuana consumed in Kenya is believed to originate from Tanzania because of laxity in enforcement by the authorities (Yusuph, 2016). Hence South Nyanza Region is most affected as it borders Tanzania (Otieno, 2012) . The proximity of the colleges' location to major drug routes has been found to have a differential impact on participation in substance use among students (Williams, 2001). MTCs students were considered in this study as they are exposed to prescription drugs in the course of their clinical training (Akvardar, 2004) in addition to other substances of abuse. MTCs are also among the majority tertiary colleges in the region and it makes the biggest contribution to the health sector in Kenya for both public and private health sectors, accounting for more than 80% of the health care workforce (KMTC, 2014).

This research therefore established the extent of substance abuse by students in MTCs in South Nyanza Region and suggested an appropriate mitigation strategies that could be instituted among institution and individuals affected.

1.2 Statement of the Problem

Abuse of various substances by college students continues to be a growing concern in Kenyan institutions of learning including MTCs in South Nyanza Region. Major marijuana transit route from Northern Tanzania to Nairobi Kenya passes through South Nyanza Region. The proximity of MTCs to this route could expose the students to substance abuse. During the course of clinical training, MTCs students are exposed to prescription drugs which could lead to abuse in addition to other substances of abuse. However, this is unknown as the abused substances, prevalence and factors associated with substance abuse by the students in MTCs in South Nyanza Region are yet to be established. Hence, it was worthwhile for the researcher to establish the prevalence of substance abuse and associated factors among the MTCs students in South Nyanza Region, Kenya.

1.3 General Objective

To assess the prevalence and factors associated with substance abuse by students in medical training colleges in South Nyanza Region, Kenya.

1.4 Specific Objectives

1. To identify the substances abused by students in medical training colleges in South Nyanza Region, Kenya.
2. To establish prevalence of substances abused by students in medical training colleges in South Nyanza Region, Kenya.
3. To establish factors associated with substance abuse by students in medical training colleges in South Nyanza Region, Kenya.

1.5 Research Questions

1. Which are the substances abused by students in medical training colleges in South Nyanza Region, Kenya?
2. What is the prevalence of substances abused by students in medical training colleges in South Nyanza Region, Kenya?
3. What are factors associated with substance abuse by students in medical training colleges in South Nyanza Region, Kenya?

1.6 Justification of the Study

Substance abuse is a significant public health concern that continues to increase among the youth in Kenya (NACADA, 2012). Despite intervention efforts, the abuse of legal and illegal substances by youth within the country is still widespread (Chesang, 2013). According to Otieno (2012), marijuana impounded along Kisii - Migori road between 2010 and 2011, was estimated at Ksh.50 million. South Nyanza Region was the most affected region (Otieno, 2012). In addition to effects on health and academic performance, substance abuse by students in MTCs could also impact negatively on their future professional conduct and efficiency, and hence the safety of patients (Rai, 2008). This emphasizes the need to develop measures that will prevent substance abuse, especially by students in MTCs.

A vital component required for designing interventions to prevent substance abuse among students in MTCs and the detrimental effects with which it is associated, is a clear understanding of specific substances abused and factors associated with such abuse. This study, therefore, aims to establish the prevalence and factors associated with specific substance abuse by MTCs in South Nyanza Region. Information obtained from this study could be used in the development and implementation of appropriate substance abuse prevention strategies.

1.7 Significance of the Study

The study could help the stakeholders such as the Ministry of Health (M.O.H.) and NACADA to better understand the current situation and accordingly make informed decision in addressing the factors that contribute to substance abuse in MTCs. Since failure to solve this problem not only threatens the life of individuals and that of patients, but also the economic and social development of the country as a whole. The current study is useful in contributing to the general body of knowledge in this area. The study therefore informs policy makers, administrators and tutors the prevalence of abused substances and factors associated with substance abuse for possible effective mitigations strategies.

1.8 Theoretical Framework

This section focuses on theory on youth substance abuse. It examines the ecological systems theory which provides an understanding on human behaviour that could be explained by the "layers of systems", and their interactions, around a person. Such interactions are also affected by relations between the settings and by the larger contexts in which these settings are embedded. In other words, these systems are interrelated and interdependent (Paul, 2011).

The problem of substance abuse by students in MTCs could best be understood by using this Ecological Systems Theory which contains four components arranged in layers, these are: microsystem, mesosystem, exosystem, and macrosystem. The microsystem component includes individuals and their families, the mesosystem component includes neighborhoods, the exosystem component includes organizations (example, state government), and the macrosystem includes overall culture; all with increasing levels of intimate interaction with the individual (Barrera, 2008).

The theory looks at a student's development within the context of the system of relationships that form his or her environment. The theory defines complex "layers" of environment, each having an effect on a student's development. The interaction between factors in the student's maturing biology, his immediate family/community environment, and the societal landscape fuels and steers his/her development. Changes or conflict in any one layer could ripples throughout the other layers. For example as the student develops the interaction within these environments becomes more complex. This complexity could arise as the student's physical and cognitive structures grow and mature. So, given that nature continues on a given path, how does the worlds that surrounding the student help or hinder substance abuse? This is the question answered by ecological theory.

He further states a setting as a place with particular physical features in which the participants engage in particular activities in particular roles (example as son/daughter, student, parent, teacher, among others) for a particular period of time. The factors of place, time, physical features, activity, participant, and role constitute the elements of a setting (Swick, 2006). The theory provides a view of the challenges faced by students in college and with their families (Swick, 2006). For example, it states that technology has changed the society, and great pains has been taken to safeguard the physical environment from the damage done by a technology, there was no resources spent to provide similar safeguards to the damage done to the societal environment (Barrera, 2008).

Therefore, according to the Paul (2011) the theoretical factors associated with substances abuse could be broken down into four components. The microsystem component covers the gender, psychological factors and abuse of an individual; the mesosystem component covers the family and parental guidance factors. The exosystem component covers the media and extracurricular activities factors. The macrosystem component covers culture and the religious beliefs factors.

1.9 The Conceptual framework

A conceptual Framework is a set of broad ideas and principles taken from relevant fields of inquiry and used to structure a subsequent presentation (Paul, 2011). This study adopts the ecological systems theory as it elaborates on the factors contributing to or hindering substance abuse. The framework borrows heavily from the theory as shown below:

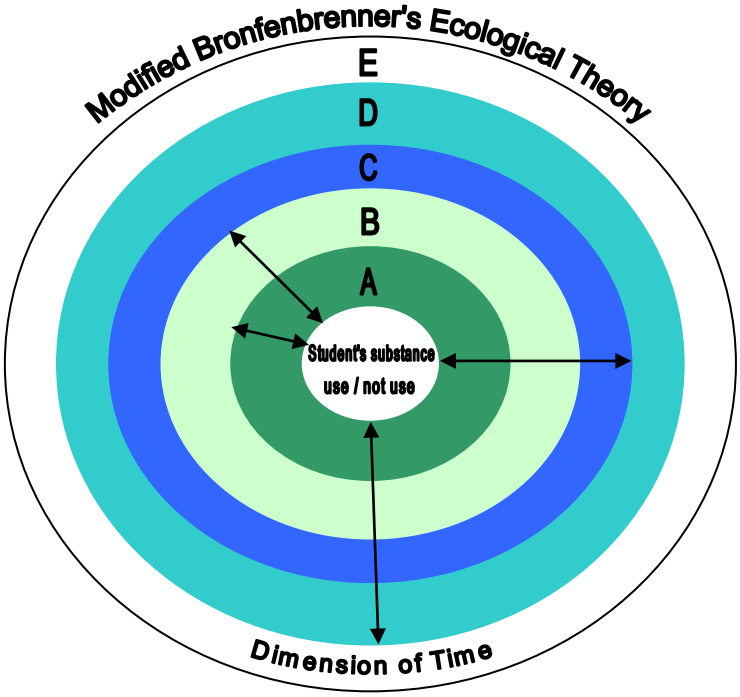

Figure 1.1: The Conceptual framework (Source: Paul, 2011)

KEY:

Student: - whether he/she is using or not using substance of abuse**.**

A. Microsystem –gender, psychological factors and abuse of an individual;

B. **Mesosystem** – family and parental guidance factors

C. **Exosystem** – the media and extracurricular activities and practices factors

D. **Macro system** – Overarching beliefs and values (the religious beliefs factors)

E. **Chronosystem** – Dimension of Time.

In this respect, ecological theory emphasizes the interaction of factors within the layers to contribute or hinder substance abuse. Although substance abuse decision making is no doubt influenced by mesosystem, exosystem, and macrosystem factors, the decisions themselves are made in microsystems, restricted to specific settings such as identifiable places, times, with clear participants and roles (Swick, 2006). The key to any prevention efforts should address each of the relevant layers as indicated by the framework.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter is a presentation of literature review. Literature on the substances abused, their prevalence and factors associated with substance abuse by the students in medical colleges were examined.

2.2 The Substances Abused by Students in Colleges

There is considerable variation in the legal and illegal substance use among youth between countries with higher prevalence among youth from developed countries (Simbee, 2012). The most abused substances in the world are alcohol, tobacco, khat (miraa), marijuana (bhang), glue and heroin (UNODC, 2010).

In USA, cannabis is the most commonly used substance followed by tobacco. By their senior year of high school 80% of American adolescents have used alcohol, 61% have used tobacco, 54% have used cannabis and 29% have used an illegal drug other than cannabis (Simbee, 2012). In Europe and Asia, most of the demand is for opiates, while in Africa and Oceania, it is cannabis (UNODC, 2010).

In Kenya, a study from other setting has indicated relatively high rates of alcohol and other substances abused by students in educational institutions (Atwoli, 2011). There is, however, scanty information on the specific substances abused in medical training colleges. This study, therefore aimed to find out information on the various substances abused in the medical training colleges in South Nyanza Region. Commonly abused substances are highlighted further below.

2.2.1 Alcohol

Alcohol consumption is both a health and social issue, being utilized by over 2 billion people world-wide causing considerable harm through its abuse, although it is acceptable in moderated drinking (Freeman, 2006) (Odeyemi, 2014). This practice has been part of human history since antiquity with numerous biblical examples and ancient myths referring to alcohol. Local oral history and archaeological findings suggests that consumption has been part of human culture,

rituals, tradition and custom since "time immemorial" though its consumption increasing in recent decades (Odeyemi, 2014), patterns of alcohol use have also changed significantly over time and evidence suggests that the quantity used now is far greater than in earlier times (Freeman, 2006). One of these changes has been the replacement of traditional and locally produced beverages with industrial beverages, in particular Western-style commercially produced beer leading to a sustainable regular heavy drinking (Freeman, 2006).

Heavy drinking among students in institutions of higher education is described as widespread, dangerous, and disruptive (Ross, 2008), leading to health and social consequences via intoxication, dependence, and other biochemical effects. Overall there is a causal relationship between alcohol consumption and more than 60 types of disease and injury. Liver disease is the most common medical complication of alcohol abuse (Odeyemi, 2014). According to WHO (2012) 320,000 young people between the age of 15 and 29 die from alcohol-related causes, which is 9% of all deaths in that age group. Alcohol and other substances abuse are destroying today's youth. It is a social malady contributing to rape, crime, academic under achievement, sexual behaviour, addiction, and numerous health, mental health, and emotional disorders (Changalwa, 2012) (Williams, 2001).

Prevalence statistics from population surveys consistently show that underage and binge drinking among college students is higher than estimates from the general population (Williams, 2001). WHO (2004) estimates over 2 billion people worldwide consumes alcohol with clearly no single reason why they do or why different people drink to different extents (Freeman, 2006). In a study in USA, it was found that problematic alcohol consumption was common among medical students with up to 20% of first-year medical students admitting to excessive alcohol intake (Halldorsson, 2006). Although published systematic data on the prevalence of alcohol abuse among medical students especially from developing countries is lacking, few studies suggested that there is addiction to alcohol among health professionals (Akvardar, 2004). Research on alcohol and its translation is important to provide the knowledge base for on-going national and global action (Odeyemi, 2014).

In Kenya, according to NACADA report (2012) about 30% of Kenyan population, aged between 15 – 65 years have ever used an alcoholic drink though Changalwa (2012) estimated that up to 70% of the students were using alcohol and with the trend increasing four times in the past four years. This would easily lead to abuse, though medical training college students falls within the age group, their prevalence could be different because of difference in academic, clinical exposure and expectation. According to NACADA (2010), alcohol prevalence among students generally was highest in Western 43.3%, followed by Nairobi 40.9% and Nyanza 26.8%. Among the non-students, consumption is highest in Western at 90.1% and Nyanza at 81.5%. This clearly showed prevalence of abuse of alcohol is high in the region. However, the study by NACADA focused on the general population and little is known on the prevalence on alcohol use/abuse among students in medical training college in South Nyanza Region.

Alcohol consumption is influenced by factors such as genetics, social environment, culture, age, gender, accessibility, exposure and personality (Freeman, 2006). Beliefs about alcohol are established very early in life, even before the child begins elementary school. Depending on various factors it could be negative or positive. As would be expected, youth who drink the most, place the greatest emphasis on the positive and arousing effects of alcohol (Odeyemi, 2014). On the other hand, alcohol consumption is less likely to be reported by users and more likely to be overlooked when collecting information because of religious and cultural norms (Odeyemi, 2014).

The type of alcohol is another factor. Data on alcohol consumption is usually measured in terms of recorded alcohol derived from formal production and sales. Unrecorded consumption includes traditionally brewed beverages and beverages with alcohol below the legal definition of alcohol (Freeman, 2006) (ICAP, 2008). Also included is the "surrogate" alcohol which is widespread in some areas, particularly among drinkers in the lowest socioeconomic brackets (ICAP, 2008). In Kenya, *Chang'aa,* a distilled drink, is perhaps the most predominant non-commercial beverage among Kenya's poor a drink of choice for those who cannot afford beer. Among other popular beverages are *busaa, muratina and urwaga* (ICAP, 2008). Unrecorded alcohol could the one consumed by medical training college students especially as they are mostly financially constrained, though it is not within the context of this study to establish the types of alcohol

used. MTCs' students are part of the future health work force and their practices influence the communities in which they serve. In addition, young people are a vital group at which health promotion strategies is targeted. The results of this study could contributes to evidence based decision making in developing programmes to reduce substance abuse and ultimately reduce the burden of non-communicable diseases.

2.2.2 Tobacco

Tobacco smoking constitutes a major public health problem in the world. It is the most important preventable risk factor for diseases, disabilities and death globally (Kwamanga, 2013). There are an estimated 1.1 billion smokers worldwide, approximately 47% of these being men and 12% women (Karamat, 2011). Globally, during the past two decades, cigarette production has increased at an average of 2.2% per year (Elamin, 2013). This was due to rise on smoking rates in low- and middle-income countries, where Kenya falls, though overall cigarette consumption had declined for decades in high-income countries (Elamin, 2013).

Cigarette smoking is prevalent among students of health care professions. One study showed that 29% were current smokers among students of the College of Applied Medical Sciences in Riyadh, Saudi Arabia. Another study in the same country showed that regular smoking has a prevalence rate of 13.6% among medical students at the University College of Medicine in Abha, (Elamin, 2013).

In Africa, a study on cigarette smoking among medical students in The National Ribat University in Sudan, found that smoking was practised by about 10 % of student population and the trend was on the increase. In Kenya, the national average for the tobacco consumption among adult general population was at 14 % (NACADA, 2012). Another study in Kenya among Nairobi's public and private secondary school students found lifetime rate of smoking by students at 20% and an average age of onset at 14 years (Kwamanga, 2013). The problem of smoking among medical students seems common worldwide, though the pattern and extent of the problem varies from place to place. Students were influenced by various factors to smoking; parents and family history of smoking was one of them, where 25% of all smokers had at least one family member who smoked (Elamin, 2013). Awareness also of the risks of smoking would decrease smoking

habits among the population. Since medical students have greater exposure to awareness programs and greater knowledge of the risks of smoking compared to other groups, it might expected of them to have a lower prevalence of smoking than non-medical students. However, evidence suggests that tobacco use remains widespread among medical students despite their greater knowledge of the risks (Azhar, 2012). All the factors associated with these are yet to be explored fully. Most female students indicated that stress was a huge factor in starting smoking, with a feeling of relaxation and the ability to cope with stress being the most common reason given for smoking (Azhar, 2012). The use of tobacco does not have major psychotoxic effects even when consumed in large amounts. This has allowed tobacco to become a socially acceptable substance, promoting it use (Herity, 1974). Moreover, peer pressure remains a major factor in pushing young into this menace (Karamat, 2011).

Therefore from the studies, the problem of smoking among medical students is common worldwide, but the pattern and extent of the problem varies from place to place. This study seeks to establish the prevalence and factors associated with the phenomenon among students in medical training college in South Nyanza Region.

2.2.3 Cannabis Sativa (Bhang)

Cannabis Sativa, commonly called marijuana is an herbaceous annual plant that is cultivated or grows wild in most tropical and temperate regions of the world (NLJ, 2015). It is cultivated for three main reasons: hemp fibers from its stems, oil from its seeds and the psychoactive substances from its flowering tops (NLJ, 2015), it remains the world's most widely produced and used illicit substance, grown in almost all countries of the world (UNODC, 2010).

Cannabis Sativa is illegal in many countries including china where it was introduced around 6000 years ago (Smith, 2013). In Jamaica for example, her law stipulates that it should not be cultivated, reaped nor smoked though relationship between the plant and that country is very strong and therefore the subject of many controversial and heated arguments, as it has been in use for medicinal, folk and cultural/religious reasons (NLJ, 2015). The plant assumes a cultural/religious significance in parts of the world through its use in the indigenous Rastafari "religion" where it is smoked and regarded as the "holy herb." It also has a close link to its music

and is almost as synonymous to reggae as to Rastafarians (NLJ, 2015). Scientists and researchers contend that the cannabis plant contains several chemicals that may prove useful for treating a range of illnesses or symptoms, leading many people to argue that it should be made legally available for medical purposes. In USA, it is categorized as a schedule I drug under the Controlled Substances Act (The Drug Enforcement of Administration, 2014). This classification does not interfere with allowing research, and for those drugs formulated with the plant or its crude extracts from being reviewed and approved by the Federal Drug Agency (FDA) and much research is being done.

Use of cannabis among young people is of particular concern, since its use by this age group is associated with an increased likelihood of deleterious consequences. It would result in long-lasting changes in brain function that can jeopardize educational, professional, and social achievements (Office of National Drug Control Policy, 2004) (Volkow, 2014). It is associated with the development later in life of serious mental health disorders: addiction, major depression, anxiety and psychotic disorders such as schizophrenia (Volkow, 2014). One systematic review estimated a 40% increase in the risk of psychosis among adolescents who had tried cannabis and a 50 to 200% increase among more frequent (heavy users). Daily use of cannabis in high school is associated with a six-fold increase in depression and anxiety later in life (Volkow, 2014) (Smith, 2013).

Cannabis Sativa is used by 130-190 million people at least once a year (UNODC, 2010). In USA, about 12% of people of above 12 years of age reported use (Volkow, 2014). In Australia approximately 40% of population aged 14 years or older has ever used cannabis (Smith, 2013). In a study to assess substance abuse amongst the medical students in India, the prevalence of cannabis abuse was 4% (Karamat, 2011). In Kenya, of all illicit substances, marijuana was the most easily available at 49% (NACADA, 2012). The same study further showed 5.4% among those aged 15-65 years reported to have ever used marijuana (NACADA, 2012). In a study on drug abuse among secondary school students in Kisumu Town, Western Kenya showed that (18.3%) had abused cannabis. While research on the prevalence of cannabis use has been done among other population in Kenya, this effort was made to establish the prevalence among medical training college students.

The factors associated with cannabis use were varied. For example, though Cannabis Sativa is popularly used in Jamaica, its cultivation, exportation, consumption and sale has been illegal but used for medical purposes (NLJ, 2015). World trend indicates gradual softening of laws on Cannabis Sativa (NLJ, 2015). The legalization debate was brought to the forefront in 2014 when the USA state of Colorado legalized the use of marijuana for medicinal purposes (Hopfer, 2012) (NLJ, 2015). The liberalization of marijuana laws and increasing availability of medical marijuana have led to greater acceptance of the drug among adults and adolescents who view it as non-addictive and less harmful than other drugs (Gottlieb, 2012). The use of cannabis has been socially acceptable in some countries such as India, Pakistan and North Africa (Herity, 1974).

A contentious debate exists regarding the influence of legalized medical marijuana on adolescents' perceptions and abuse (Hopfer, 2012). One perspective centers on concerns that labelling marijuana as medicinal may increase its acceptability and reduce the perceived risk of use, in addition to concerns that it could lead to more availability and widespread abuse. The other perspective asserts that legalizing medical marijuana does not change marijuana perceptions and use (Hopfer, 2012) (Office of National Drug Control Policy, 2004). The debate on the pros and cons of legalization of marijuana is therefore on (Hopfer, 2012), though in Africa and particularly in Kenya, marijuana is still illegal. Other factors associated with cannabis use by the youth include having parents who are permissive or who are smokers, friends who use the drug, poor academic performance, or being involved in other negative behaviours, such as drinking alcohol and smoking cigarettes (Gottlieb, 2012). The mentioned studies show clearly that a large portion of the population and particularly the youth could have access and could abuse the substance. However, the prevalence and factors associated with the problem among the students in medical training college is yet to be established in these colleges particularly in South Nyanza Region.

2.2.4 Khat

Khat goes by numerous names: Khat, qat, chat, miraa, tohai, African tea, and African salad. It is found in the flowering evergreen tree or large shrub of Celastracea family (Basker, 2013). It consists of whole fresh leaves and buds of a plant known as Catha edulis. It is indigenous in

Ethiopia, Yemen and in the Kenyan highlands, in what is becoming known as the khat belt (Wazema, 2015). More than 20 different compounds including cathinone, cathine and norephedrine have been isolated from Khat (Basker, 2013). Cathine and cathinone are psychoactive alkaloids similar to amphetamines (Wazema, 2015).

The use of khat is an established cultural tradition for many social situations in the areas of primary cultivation, East Africa and the Arabian Peninsula (Basker, 2013) with an estimated 10 million people chewing khat leaves daily (Wazema, 2015). For example it is the main substance abused in Somalia, where its use has been a long-standing tradition (Odenwald, 2007); with 64% of adult males from the general population regularly consuming khat from the north and 21% from the south (Odenwald, 2007). In a study in Ethiopia, it showed that the prevalence of khat use was at 50% among adult population, while among college students in North West Ethiopia the lifetime and current prevalence rate of Khat chewing were 26.7 % and 17.5 % respectively (Wazema, 2015). According to NACADA (2012), the prevalence rate of khat abuse in Kenya, for persons aged 15-65 years was at 8.9%, while among young people aged 15-24, was at 4.7%. This study is to establish the prevalence of khat use by students of medical training colleges.

Although largely viewed as a social habit, long-term heavy chewing has been reported to induce a degree of dependence. Khat is of interest as one of few plants that are legally consumed for their ethno pharmacological properties. Until a few decades ago, khat chewing was mainly restricted to older men or members of Muslim communities who used it in lieu of alcohol on religious grounds (Basker, 2013). There has been a major association between khat chewing and the health hazards like diminished sexual performance, HIV infection, sexual violence, elevated diastolic blood pressure, affecting urinary and digestive system, periodontitis, liver injury, psychiatric problems, ophthalmological problems (Basker, 2013). 11None the less, khat use in many western countries has been restricted or made illegal and is as such classified as a controlled substance (Basker, 2013).

Various complex factors underlie the use of khat. Though, commonly used for social recreation purposes and most importantly, khat is a relevant source of income for farmers and marketers in Yemen, Ethiopia, Somalia and Kenya. Khat use is also widely accepted even for children in these countries and strongly intertwines with cultural and gender identity and local customs

(Basker, 2013). In a study among undergraduate students of Jimma University, Ethiopia found, it found that those who were Muslim were 7.59 times more likely to be Khat abuser when compared with Orthodox Christian followers. These are among other factors are associated with khat abuse (Wazema, 2015).

Khat chewing is therefore a public health problem affecting millions of people in East Africa and Yemen (Wazema, 2015). It is an issue of concern among the youth (Wazema, 2015), including those in medical training colleges. This study was about the magnitude of khat abuse and their associated factors among medical training college students in South Nyanza Region.

2.2.5 Prescription Drugs

A drug is prescribed for specific therapeutic purposes. Obtaining and taking them without a prescription for the purpose of experiencing some desired effects is abusing the drug (Mokua, 2012). Studies have shown that prescription drug abuse is an enormous challenge to modern society (Halldorsson, 2006). The abuse of prescription drugs has profound affect the lives of population including the youth, resulting in serious health consequences including addiction and even death. Abuse would also impact negatively on academic performance and relationships with friends and family members (NNAS, 2011).

There is growing concern in the medical community about physicians impaired by substance abuse. While medical students and physicians may help patients resolve substance dependency, they are not immune to these temptations themselves. They have the most contact to psychoactive substances, and many have high levels of work-related stress, frequent contact with illness and death, disrupted sleep and social life, as well as erosion of taboo against injections and opiates (Akvardar, 2004).

In a study in USA, it showed that non-medical use of prescription medications was on the rise across the country. An example was in rural areas where prisoners and probationers in South-Western Virginia were found to be abusing prescription medications, (Wunsch, 2008). In UK, alcoholism and prescription drugs abuse were the top two substances abused by older women (Tuchman, 2008).

In Kenya, at workplace, the abuse of prescription medicines among women was at 15.4% compared to 8.7% among men (NACADA, 2012). The same research showed that within regions, prescription drugs were most easily accessible in Nairobi (54.6%) followed by Nyanza (45.2%); (NACADA, 2012). It is estimated that approximately 10-15% of all health care professionals will abuse drugs at some time during their career (Naidoo, 2012). Although there is a paucity of literature, abuse of prescription drugs among this group may be more prevalent (Naidoo, 2012). Some studies have added that prescription drug abuse, specifically benzodiazepines and opiates, was higher among medics than in the general population, therefore more research in the area was needed so that mitigation measures could be identified (Halldorsson, 2006).

These researches showed there was a rise in the abuse of prescription drugs among the general population and health workers in particular. However, there was need to establish the prevalence of prescription drugs abuse by medical training college students who could have access to and were most in contact with prescription drugs for informed preventive intervention among this group.

2.2.6 Emerging Substances of Abuse

The emerging drugs are combinations of the commonly abused drugs or precursor chemicals used as raw materials in the manufacture of various pharmaceutical products, and have the potential of being converted to illicit drugs (Kahuthia-Gathu, 2013). The detection and identification of emerging substances of abuse is a fundamental step in assessing the potential health risks of new psychoactive substances such that scientific, epidemiological, forensic and toxicological information on these substances needs to be collected, updated and disseminated (UNODC, 2013).

Shisha and *Kuber* were common emerging substances of abuse (Kahuthia-Gathu, 2013). *Shisha* is a flavoured tobacco common among the Asian community gaining popularity among the youth (NACADA, 2011). Similarly, *Kuber* is a substance of abuse that has Asian origins. It's gaining popularity because when one is using it, it is not easy to notice. It is also cheap and comes in small sachets that are very easy to conceal in any part of the body. It has no smell neither does it

have any smoke emitted when it is being abused. It is mainly abused among people of Asian origin. It intoxicates very slowly a very low cost (Simatwa, 2014). In a study done in Kenya in Nairobi and Mombasa counties; emerging uses of substances of abuse comprising of one or combinations of drugs were recorded, with Nairobi recording significant higher number of emerging drugs than Mombasa. Many of the highly abused drugs were *kuber, shisha*, jet fuel, rohypnol, artaine among others. *Shisha* and *kuber* were most commonly abused drugs in both counties with over 25% of the *shisha* and *kuber* abusers aged between 26 to 35 years (Kahuthia-Gathu, 2013). In another study by NACADA, findings showed that *kuber* is easily accessible in Nyanza (NACADA, 2012). The mentioned research mainly focused on Nairobi and Mombasa counties. However, this study focused on South Nyanza Region particularly the MTCs' students.

2.2 Prevalence of Substances Abused by Students

Globally, there has been an increase in the production and abuse of psychoactive substances, (UNODC, 2013) with the total number of drug abusers in the world is now estimated at 200 million people. This is equivalent to about 5% of the global population. Several studies have looked at the prevalence of substance abuse among physicians, residents, and medical students with an estimate between 10-15% risks over a lifetime (Halldorsson, 2006). The majority of the studies done so far on the area are from developed countries with only a few are from developing countries (Atwoli, 2011).

A study of eight USA medical schools revealed 20% of students to had engaged in binge-drinking at least once in the 30 days of the study and 28% of students reported an increase in alcohol consumption during medical school, (Yousafzai, *et al*., 2009). In a study among medical undergraduates of two medical institutions in Lahore (Pakistan) it was found that substances used by students in order of preference were cigarettes 78.9%, alcohol 26.2%, cannabis 25.5%, amphetamines 14.6%, benzodiazepines 3.6% and glue sniffing 0.4% (Imran, 2011).

In Africa, according to Nwadigwe (2008) of Nigeria, substance abuse was prevalent among medical students in the country while in a study in South Africa, it was found out that 32% of medical students admitted to alcohol intake exceeding the recommended limits while 55.3% were identified as at-risk drinkers (Smit, 2009).

In Kenya, NACADA noted in a study that substance abuse was rampart among the learners (NACADA, 2010), though there was no focus on medical training colleges students. Research studies show that the prevalence of the substance abuse among the youth and specifically students was high. A study found a lifetime substance use prevalence rate of 69.8% among college students in Eldoret, Western Kenya (Atwoli, 2011). However, there was scanty information available on medical training college students in Kenya. This study was specifically focusing on Medical Training Students who form the bulk the future of the Kenyan health care force. The findings of the research study could aid in the formulation of informed prevention strategies to curb and reduce the menace in the medical colleges in the region and the country.

2.4 Factors Associated with Substance Abuse by Students

There are various factors associated with substance abuse among the students in colleges. A wide range of factors determines why, what, and when people take drugs and how much harm result as well as the attitude held (Mokua, 2012).

A study in South Africa, found it as a result of a complex interaction of individual, family, peer, community, and societal factors (Visser, 2003). Jessor further provided factors that include the social environment, the perceived environment, personality attributes, behaviour, biological and genetic factors (Visser, 2003). According to NACADA (2012), the several factors that influence the substance abuse among the youth in Kenya include peer pressure, weak parental control, child abuse, imitation, emotional stress, truancy among students and other factors. The findings from these researches have attempted to show the factors associated with substance abuse on other set up. This study examines a few specific associated factors with the abuse. These are gender, family history of substance abuse and parental guidance, history of individual consumer being abuse, stress, religion, media, and extracurricular activities among the MTCs students in South Nyanza region. These factors are further discussed below.

2.4.1 Sex

Historically, substance abuse research participants have largely been male (Tuchman, 2008). Existing gender norms largely influence the drinking habits of men and women and most social norms to regulate the use of alcohol tend to be gendered. It was generally agreeable for men to consume strong drinks and to have their drink anywhere. Women, on the other hand, were expected not to have strong drinks or drink away from their home. While use of alcohol among

young boys was linked to masculinity, among girls it was associated with lack of respect (Odeyemi, 2014).

Emerging evidence clearly established the importance of studying issues specific to women and studying male-female differences in all areas of substance abuse research (Tuchman, 2008). In a study in Nigeria, it was found that young girls tend to abuse hypnotic-sedatives more than the boys while the reverse was noted in case for stimulants (Nwadigwe, 2008). Among 240 students of College of Medicine, University of Lagos, Nigeria, alcohol consumption was more prevalent among males than females (Odeyemi, 2014).

When women were compared, urban African American women reported higher crack abuse with 7.1% of African-American women reporting drug abuse than other women (Boyd, 2002). Several demographic and clinical factors that differentiate women from men with regard to substance use have been identified. Women were more likely than men to come from families where one or more members were also addicted to drugs or alcohol, attributed the cause of substance abuse to genetic predisposition, family history, environmental stress, and a traumatic event or stressor (Tuchman, 2008). Although men generally have higher prevalence than females, gender differences in substance use were more marked in some countries than in others.

In Kenya, substances are readily available to adults and youths; with girls and women catching up fast with males threatening to tear the social fabric of the nation (Jagero, 2011). In Kenyan workplace, there were significant differences in prevalence of substance abuse among the sexes with more men than women being engaged in the usage of each of the drugs (NACADA, 2012).

The evidence presented from the mentioned studies shows that there are noteworthy differences between men and women in terms of the prevalence and factors associated with substance abuse among the general population. This could be reflected among the students in MTCs, though to what extent is what this research intended to establish.

2.4.2 The Family History and Parental Guidance

A family history of substance abuse and dependence substantially increases the risk for such problems among its members (NACADA, 2012). It contributed significantly to the incidence of domestic aggression, violent crimes, broken homes and juvenile delinquency in Nigeria (Nwadigwe, 2008).

Parents are the most powerful influence on their children when it comes to substance abuse. By staying involved, knowing what their children are doing, and setting limits with clear rules and consequences, parents can increase the chances that their youth will stay substance abuse free (Office of National Drug Control Policy, 2004). It has been found that positive outcomes for children were linked to nurturing family settings. Children do best when parents are warm and caring; provide predictable, daily routines; and set clear limits for acceptable and unacceptable behaviours (Bokony, 2010). Parenting is often lacking in the homes of parents who abuse alcohol or other substances (Bokony, 2010). It is also mentioned that parental substance abuse is highly disruptive to family functioning. It is a risk factor towards negative parenting practices. Their children usually have a higher rate of exhibiting behavioural and emotional problems, and they also have a higher rate of child abuse and neglect (Paul, 2011).

In another study, it was found that millions of children globally were affected by their parents' substance abuse with more than eight million children living with at least one parent who abuses alcohol or drugs (Bokony, 2010). It was also noted that families with substance abusing caregivers often had more health risk factors and more complex issues than families with non-substance- abusing caregivers (Bokony, 2010). Parents who abuse substances were more likely to expose their children to physical abuse, neglect, chronic stress, unstable housing, crime, and unsafe neighbourhoods. These parents may be unable to provide children with the kind of safe, predictable home environment that research has shown to promote the best outcomes for children's health, development, and academic success (Bokony, 2010) (NACADA, 2012). Learners in South Africa who indicated that they did not experience high levels of support from their families and friends were more likely to be exposed to substance abuse in their homes (Visser, 2003).

Research also shows that appropriate parental monitoring could reduce future substance abuse even among adolescents who may be prone to abuse, such as those who are rebellious, cannot control their emotions, and experience internal distress (Office of National Drug Control Policy, 2004). The evidence presented in the mentioned studies shows that parental guidance play a vital role to addressing problems on substance abuse among the youth. This study has been done to find the extent family history and parental guidance contributes to substance abuse among MTC students who were drawn from varied family, ethnic and cultural background which could be contributing to substance abuse in the institution.

2.4.3 Religion

Researchers have since recognized that religion is a core element of culture and a powerful potential motivator on control of behaviour. It is known to exert both mediated and unmediated effects on motivation, health, coping with distress, and other behaviours (Ulmer, 2012). Religious involvements appear to help protect youth from delinquent behaviour and other deviant activities, especially substance use and underage alcohol use (Ulmer, 2012). Despite this, the importance of religion in human society and behaviour is relatively neglected in empirical studies exploring the aetiology of substance abuse (Kendler, 1997). There has been an increase in the literature that recognizes religion as an important correlate of substance use and the "lack" of religion as a risk factor to increase its use (Wallace, 2003).

Religion therefore may play a part in substance abuse prevention. Researchers have found that religious settings act as youth's socialization ground and perhaps contribute to their abstinence from substance use. It provides the functions such as psychological affirmation, identity, social support, protest, economic activity, education, creativity (plays, music) and social interaction. Another aspect is the presence of positive role models who emphasizes mainly on abstinence; provide opportunities to participate in pro-social activities and have strong, often activist stances against drugs taken by religious leaders and congregations (Wallace, 2003). Among 240 students of College of Medicine, University of Lagos, Nigeria, 66.3% of the respondents that did not consume alcohol did not do so because it was against their religion (Odeyemi, 2014).

A growing body of researches have suggested that religion is an important protective factor against substance abuse (Wallace, 2004). Though these may not be evident in Mombasa County which has recorded substance abuse prevalence rate of 37.6% while the county is predominately

populated by Islamic faith and according to Reach out Centre – Mombasa, an estimated 85% of the chemical dependants subscribe to the Islamic faith (NACADA, 2012). Studies have showed that religion may both be a protective and contributing factor to substance abuse. This study attempted to establish contribution of religion to abuse of substances in the MTCs in South Nyanza Region.

2.4.4 Psychological Factors

Psychological factors include patterns of thought, behaviour, personality traits, self-esteem and coping skills among others. Owing to a lot of mental stress in academic courses and unachievable expectations from teachers and parents, some youths turn to substance abuse (Ondieki, 2012).

Medical training college students experience substantial stress from the beginning of the training process. Although some degree of stress is a normal part of medical training, it could be a motivating factor for some individuals to engage in substance abuse because not all students find stress constructive. For many individuals, stress arouses feelings of fear, incompetence, uselessness, anger, and guilt and could contribute to both psychological and physical morbidity (Dyrbye, 2005) (Naidoo, 2012). Alcohol has been cited as a coping strategy for stress, a way to escape problems, and a means to overcome idleness and boredom (Odeyemi, 2014).

Some other studies have suggested that heavy demands during medical training contribute to substance abuse. It has been pointed out that the trends toward addiction start very early among many health professionals, although it may not be diagnosed until later on, and have more to do with poor coping skills regarding stress (Halldorsson, 2006). Mokua (2012) noted that psychological stress and the overwhelming availability of substances of abuse offer a tempting respite to college students.

These studies have shown that stress is contributing factor to substance abuse; this study therefore intended to establish the contribution of stress to abuse of substances among students in the MTCs in South Nyanza Region.

2.4.5 History of Respondent's Abuse

Another factor contributing to substance abuse is history of an individual being abused. Findings from studies show that people with abuse histories often have more substance abuse and psychiatric problems (Ouimette, 2008). For child sexual abuse, several narrative reviews have shown that there are higher rates of child sexual abuse among people who abuse alcohol and other drugs. Some of these reviews have stated that survivors of early sexual victimization are at increased risk of abusing drugs and alcohol, with some reviews, strongly implying a causal relationship between child sexual abuse and later development of substance abuse (Maniglio, 2011). This study therefore intended to establish whether history of abuse of individual contributed to abuse of substances among students in the MTCs in South Nyanza Region.

2.4.6 The Media

Today's youthful people live in a world vastly different from that of their parents and grandparents. They are bombarded constantly with pro-drugs abuse messages in print, television screens and on movies. They also have easy access to internet, which abounds with sites promoting wonders of drugs, offering incentives for having drug tests and in some cases advertising points of sale (Office of National Drug Control Policy, 2004). Much of the substance abuse exposure occurs at home, through television, and increasingly the internet, where youth can view pictures of youth, their own age, partying with alcohol, marijuana and other substances (University of Colombia, 2012). With alcohol consumption always being a common discussion in college atmospheres, the major reason college students feel the need to binge drink it could be formed from the advertising geared towards college students.

A number of other survey studies have reported associations between recall of alcohol use seen in the media and outcomes like alcohol expectancies, consumption and argue (The Higher Education Center for Alcohol, Drug Abuse, and Violence Prevention, 2011). Another study indicated also that substance abuse by leading characters in movies and soaps increases social acceptance of substance abuse and foster initial and continued abuse among young people (Engels, 2009). Among 240 students of College of Medicine, University of Lagos, Nigeria, their major sources of information on substance use were television, radio and books. The least represented source of information was from family members with media having a major influence on alcohol use among young people (Odeyemi, 2014).

Social media also may influence students to abuse substances. For example, in the early days of Facebook at the University of Nebraska, there were over 500 Facebook groups which were involved some form of college drinking and partying (The Higher Education Center for Alcohol, Drug Abuse, and Violence Prevention, 2011). In a study at Los Angeles, USA, in a typical day, 70% of teens ages 12 to 17 million teenagers, spend from a minute to hours on Facebook and other social networking sites (Anzuoni, 2009). For this same age bracket, the social-network-savvy teens were five times more likely to use tobacco; three times more likely to use alcohol; and twice as likely to use marijuana compared to teens who did not spend any of their time in the day on social networking sites (Anzuoni, 2009).

Kenya has very active media, social media included, with the youth including those in MTCs probably being very active in social media, therefore this study intended to find the contribution of media to substance abuse among the MTCs students in South Nyanza Region.

2.4.7 College Extracurricular Activities

Multiple demands on students' time can also drain the reservoir. Students spend many hours in lectures, labs, review sessions, and independent study. Many students consequently spend less time in health-promoting activities, such as exercising and socializing (Dunn 2008). Extracurricular activities could either be contributing or protective factor to substance abuse. Students who participate in such activities such as sports, church, clubs and service work in the college, community and government are less likely to abuse drugs or alcohol (www.ehow.com, 2014).

Extracurricular activities replenish students by multiple inputs, including psychosocial support, social activities, mentorship, and intellectual stimulation. Medical school administrations through extracurricular programs and the creation of a supportive "cultural" environment can buttress the internal structure of students' reservoirs. By strengthening the internal structure of the student, it promotes resilience and personal growth (Dunn, 2008). Therefore extracurricular activities plays a important part in reducing abuse of substance of in colleges, however, its was yet to be established whether extracurricular activities contributes to or hinders substance abuse among students in MTCs, therefore this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The chapter is the presentation of the research methods and procedures used in carrying out the study. It describes the study area, the target population, sample size and sampling procedures, study design, data collection instruments, data analysis and presentation.

3.2 Study Area

The study was carried out in the MTCs within South Nyanza Region, which was originally South Nyanza District. It is located within the South Western part of Kenya along the shores of Lake Victoria. This region falls under four counties i.e. Homabay, Migori, Kisii and Nyamira with the co-ordinates 0° 31'S and 34° 27'E, 1° 3'S and 34° 28'E, 0° 40'S and 34° 46'E , 0° 38'S and 34° 58'E respectively (Appendix A).

It has five MTCs these are one mission training college: Kendu Bay Mission School and four Kenya Medical Training Colleges (KMTCs); Kisii, Nyamira, Homa Bay and Migori. KMTC Kisii is located in Kisii town, within Kisii County while KMTC Migori is in Migori town within Migori County. KMTC Nyamira is in Nyamira town within Nyamira County. KMTC Homa Bay is in Homa Bay town while Kendu Bay Mission is in Kendu Bay town both within Homa Bay Count**y.** The colleges offers diploma and certificate programmes in various disciplines. The programmes offered include community health nursing, clinical medicine, community nutrition, pharmacy, laboratory sciences, physiotherapy among others. All the five medical training colleges within South Nyanza Region were included in the study.

South Nyanza Region borders Northern Tanzania where Marijuana grows naturally in large quantities compared to Kenya (Yusuph, 2016). Another factor considered was that medical training colleges were among the majority tertiary institutions in the region and it makes the biggest contribution to the health sector in Kenya for both public and private health sectors, accounting for more than 80% of the health care workforce (KMTC, 2014).

3.3 Study Population

The study population was all the students in the medical training colleges in South Nyanza Region. Students of both sexes were eligible to participate in the study. The colleges in the region had an approximate total population of 1950 students.

3.3.1 Inclusion Criteria

The students who were 18 years old and above and were in medical training colleges in South Nyanza Region, Kenya at the time of the study.

3.3.2 Exclusion Criteria

Those excluded from the study were the students who were sick during the time of the study.

3.4 Study Design

The study design used was cross-sectional, which used mainly quantitative approach to determine the substances abused, the prevalence and factors associated with substance abuse among the students in medical training colleges in South Nyanza Region.

3.5 Sample Size Determination

The sample size was determined by fisher's *et al* (1983) formula:

$$n = \frac{z^2 Pq}{d^2}$$

Where:

n = the desired sample size when n is greater than 10,000

z = the standard normal deviate usually set at 1.96 which corresponds to the 95% level of confidence.

p = the proportion of the students' population estimated to have abused a substance. This is unknown; therefore, 50% (or 0.5) was used (Mugenda, 2003).

q = 1.0 -p

d = the degree of accuracy desired in the study usually set at 0.05

Thus;

$$n = \frac{1.96\ x\ 1.96\ x\ 0.5\ x(1 - 0.5)}{0.05\ x\ 0.05}$$

n = 384 respondents

Adjusting for n because study population was less than 10000

Therefore nf = n ÷ 1 + (n/N)

Where

nf = the desired sample size when the population is less than 10,000

n = the desired sample size when the population is more than 10,000

N = the estimated population size (Mugenda, 2003).

Therefore; nf = 384 / (1+ (384÷975)= 275 respondents

Plus 10% for non-response: 275 x10/100 = 27.5 Thus; 28 respondents, the additional 10 % respondents were required to allow adjustment of other factors such as withdrawals and missing data (Habib, 2014).

The final sample size was 275 + 28 = 303 respondents.

The distribution of students per college is as shown in Table 3.1.

Table 3.1: The Distribution of Respondents Proportional to Size among the Students Population in the Medical Training Colleges in South Nyanza per College

S/No.	College	Number of students	Determined sample size
1.	Kisii	800	124
2.	Nyamira	180	28
3.	Migori	50	8
4.	Homa Bay	700	109
5.	Kendu Bay	220	34
Total		**1950**	**303**

3.6 Sampling Procedures

Student respondents were selected by stratified and systematic sampling methods. The study adopted stratified sampling design where a stratum represented a subgroup of the population under study, which were: the specific college, programmes offered by the college (Clinical medicine, Nursing, Nutrition among other courses), year of study (Year I, II, III and IV) and

gender (males and female students). Students in each college and year were calculated proportional to size of student (Table 3.1). Systematic sampling technique by use of class attendance registers were used to identify respondents after stratification.

Attendance registers of all the respondents in all medical training colleges according to programmes (Clinical medicine, Nursing, Nutrition, etc) and year (I, II, III, and IV) was requested. Then Sampling Interval (SI) was calculated: SI = N/n = K^{th} = (1920 ÷ 303) = 6.34, approximated as 6. A random start (RS) was selected between one and K^{th}, in this case, 1. K^{th} was added to the random start (RS). Then, adding of the SI to the sum of the previous step was continued while selecting the corresponding respondent until the sampling frame was exhausted and the desired sample obtained.

3.7 Data Collection Tool

A pretested self-administered questionnaire (Appendix B) was used to collect quantitative data. The questionnaire was modified from self-administered WHO model core questionnaire on substance abuse with questions on the themes from ecological theoretical framework being mainly adopted (Paul, 2011). Information was collected on various socio-demographic factors such as age, gender, and marital status. In addition to questions on socio-demographic information, specific substances used/abused, prevalence and associated factors with substance use were also investigated. The questionnaire was the most appropriate research tool as it allows the researcher to collect information from a large sample with diverse background; the findings remain confidential, save time and since they are presented in paper format minimizes opportunity for bias.

3.8 Data Collection Procedures

Data collection was conducted in May 2015, after obtaining the relevant clearances and permission from the authorities. Two (2) third year MTC students, who were fluent in Kiswahili and English were recruited as research assistants and trained to administer the questionnaire. They were recruited because they had been taught basics of research. Training of research assistants was conducted for two days.

The sampled students were informed were assured of confidentiality verbally before the questionnaires were distributed. The questionnaires were distributed publicly to the participants by the researcher and assistants then given time to respond. Responses which were quantitative

were entered on the spaces provided appropriately. Clarifications on particular questions were made to the respondents.

3.9 Pretesting

The pretesting was carried out at KMTC Kisumu Campus (Appendix G). The institution had similar population characteristics but in different location from the area of study. This was done to determine the effectiveness of the questionnaire in data collection as well as to make necessary corrections and to determine the feasibility of the study. The participants and the information in the pilot study were not included in the final report. Reliability was measured through 70% (Ochako, 2003) consistency in responses while validity was measured through previous research work and peer review.

3.10 Validity and Reliability

Validity is the accuracy and meaningfulness of inferences, which are based on the research results (Mugenda, 2003). To enhance validity the questionnaire was developed from a previously used self-administered WHO model core questionnaire with input modification from ecological study themes, such as family involvement, college involvement, media and internet (Paul, 2011). The tool was also subjected to critique and discussion by peers and supervisors. It was pre-tested using comparable MTC students in a nearby county before being used and adjustment was done accordingly. This helped to reduce errors associated with tools and to increase their validity. Each administered questionnaire was checked to ensure completeness of entry of information from the respondents. Reliability is the measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda, 2003). To enhance reliability, the tool was pre-tested in KMTC Kisumu Campus in Kisumu County which had the comparable students' population as the study area. This was done before data collection and the necessary corrections made, example is modification of questions of Section B in the questionnaire from the substances used in the college generally to the substances used by students individually to give a true reflection of prevalence of the substances abused. Research assistants who were senior students in medical training college were trained before collecting the data.

3.11 Measurement of Variables

3. 11.1 Dependent variables

Dependent variables were the use/abuse of substances and the specific substances abused.

3.11.2 Independent variables

Independent variables included age, sex, marital status, religion, history of substance abuse in family, year of study, programme of study and the choice of media. These variables were mainly measured as follows: Proportion that had used at least one substance of abuse; proportions that had sustained use of specific substances of abuse; association between socio-demographic factors, and use of specific substances of abuse.

3.12 Data Analysis

After data collection, data cleaning exercise was undertaken by the researcher before analysis was done. Quantitative data was analyzed using SPSS version 17. Descriptive statistics generated was used to obtain prevalence data on the substances abused. Initially, frequencies of all variables were run and descriptive statistics computed to characterize the study population. Information obtained was presented in tables, bar charts, and expressed as frequencies and percentages. Chi-square was used test for independence of variables and logistic regression analysis was used to test the association between selected variables on the factors associated with substance abuse. The strength of association was assessed using odds ratio. All tests were two-tailed and a p-value < 0.05 was considered as statistically significant. These analyses were performed using SPSS version 17 for windows, software (SPSS, Chicago, IL, USA).

3.12 Study Limitations

This study mainly employed quantitative techniques. By so doing, the study findings may have lost out on the added complimentary value from qualitative studies. Though this happened, it was done deliberately as substance abuse is associated with criminality in nature and therefore the respondents may have been freer in providing the information quantitatively. Some responses could not therefore be verified as they were based on only what the responded stated in the questionnaire.

3.13 Ethical Considerations

Ethical considerations were important to this study because of its nature and the kind of persons serving as research participants i.e. students possibly involved in drug abuse. During the study, cognizance was taken of the fact that it was establishing very sensitive issues likely to elicit hostility, insecurity or concealment of the real data required from the participants. The study was reviewed and approved by School of Graduates Studies (Appendix D) and Ethical Review Committee of Maseno University. The ethical clearance to collect data was granted by Maseno University Ethical Research Committee reference number: MSU/DRPC/MUERC/00126/14, (Appendix E). Thereafter the permission to collect data was sought and granted by the directors, KMTC (Appendix F) and Kendu Adventist School of Medical Sciences (Appendix H). Participants were informed of the nature of the study and offered choice of whether to participate or not. The participation to fill the questionnaire (Appendix B) was voluntary. Confidentiality and privacy was ensured for respondents to safeguard their interests. Informed consent (Appendix C) was obtained from all respondents who participated in the study after giving explanation of the purpose and importance of the study by signing the consent form. Respondents were not required write their names. Asking participants not to write their names on the questionnaires during the research helps ensure anonymity. The respondents were free to withdraw from the study any time without penalties. Confidentiality was be maintained throughout the study. Where some respondents required assistance due to drug addiction; they were to be referred to Asumbi Rehabilitation Centre located within South Nyanza Region, though none of the respondents came up.

CHAPTER FOUR
RESULTS

4.1 Introduction

The findings of the study are presented in this chapter. It starts with socio demographic characteristics of the respondents, followed by the findings as per the study objectives. A total of 303 students were sampled. All questionnaires were received back (100% response rate) and analysed (n=303).

4.2 Demographic Characteristics of the Respondents

The researcher sought the following demographic information from the respondents: the sex, age, religion, marital status, program and year of study. The findings were summarized in Table 4.1.

Table 4.1: Demographic Characteristics of the Respondents

Characteristics	Frequency, n = 303	Percent (%)
Sex		
Male	150	49.5
Female	153	50.5
Age		
18-23 years	150	49.5
23-33 years	153	50.5
Religion		
Christian	295	97.4
Islam	5	1.7
Others	3	1.0
Marital status		
Single	278	91.8
Married	25	8.2
Course Undertaken by the Respondents		
Clinical medicine	104	34,3
Nursing sciences	155	51.2
Laboratory sciences	14	4.6
Physiotherapy	12	4.0
Community Nutrition	18	5.9
Year of study		
First	111	36.6
Second	117	38.6
Third	58	19.1
Fourth	17	5.6

Among the respondents, 153(50.5%) were females and the mean age was 21.96 years (18-23,s.d 0.4). Nearly all respondents were Christians 295 (97.4%) and on the marital status, majority of them was single 278 (91.8%). Slightly more than half of the respondents (51.2%) were undertaking diploma in nursing sciences 155 (51.2%), while those in the second year of the study were 117 (38.6%).

4.3 The Substances Abused by Students

Among the respondents, 159 (52.5%) reported having ever used at least one of the substances of abuse. The used/abused substances were alcohol, tobacco, khat, marijuana, heroin, diazepam, morphine, *shisha* and *kuber*. The specific substances used/ abused by the students were summarised in Tables 4.2 and 4.3

Table 4.2: Substances Abused by MTCs Students in South Nyanza Region

Variable		**Current users n=303**	
		Frequency	**Percentage**
Alcohol	Yes	83	27.4
	No	220	72.6
Tobacco	Yes	8	2.6
	No	295	97.4
Khat	Yes	11	3.6
	No	292	96.4
Cannabis	Yes	6	2.0
	No	297	98.0
Heroin	Yes	4	1.3
	No	299	98.7

Alcohol was the most used/abused substance with 83 (27.4%) of respondents using it while heroin was the least used with 4 (1.3%) of the respondents using it at the time of study.

Table 4.3: Prescription Drugs and Emerging Substances Abused by the Students in MTCs in South Nyanza Region

Prescription drugs being used without medical reason		**Frequency, n= 303**	**Percentage**
Response	Phenobarbitone	5	1.7
	Diazepam	7	2.3
	Morphine	6	2.0
	Others	24	6.6
	Not abusing any	265	87.4
Emerging substances being abused		**Frequency, n= 303**	**Percentage**
Response	Shisha	20	6.6
	Kuber	12	4.0
	Shashaman	3	1.0
	Others	3	1.0
	Not abusing any	265	87.5

Among the prescription drugs, diazepam was abused by 7 (2.3%) of the respondents while *shisha* (6.6 %) was the commonly abused among the emerging substances of abuse.

4.4 Prevalence of Substances of Abuse

The prevalence of specific substances used/ abused were summarized in Tables 4.4 and 4.5.

Table 4.4: Prevalence of Substances Abused by Students in South Nyanza Region

Variable		**lifetime use, n=303**		**Current users, n=303**	
		Frequency	**Percentage**	**Frequency**	**Percentage**
Alcohol	Yes	159	52.5	83	27.4
	No	144	47.5	220	72.6
Tobacco	Yes	37	12.2	8	2.6
	No	266	87.8	295	97.4
Khat	Yes	53	17.5	11	3.6
	No	250	82.5	292	96.4
Cannabis	Yes	28	9.2	6	2.0
	No	275	90.8	297	98.0
Heroin	Yes	4	1.3	4	1.3
	No	299	98.7	299	98.7
Prescription Drug	Yes	38	12.5		
	No	265	87.5		
Emerging Substances	Yes	34	11.2		
	No	269	88.8		

Slightly more than half (n=159, 52.5%) of the respondents reported having ever used alcohol, while 83 (27.4%) respondents sustained the use of alcohol. The respondents who have ever used tobacco were 37 (12.2%) while eight (2.6%) were still using tobacco at the time of the study. The study further revealed that 53 (17.5%) of the respondents have ever chewed khat, while 11 (3.6%) were still using khat. Those who have ever used cannabis were 28 (9.2%) while those still using were 6 (2.0%). The respondents were also asked whether they have ever used heroin, 4 (1.3%) said they had used it with the same percentage of respondents (1.3%) indicating they were still using it.

Table 4.5: Prevalence of Prescription Drugs and Emerging Substances of Abuse

Prescription Drugs being used without medical reason		**Frequency, n= 303**	**Percentage**
Response	Phenobarbitone	5	1.7
	Diazepam	7	2.3
	Morphine	6	2.0
	Others	24	6.6
	No abusing any	265	87.4
Emerging substances being abused		**Frequency, n= 303**	**Percentage**
Response	Shisha	20	6.6
	Kuber	12	4.0
	Shashaman	3	1.0
	Others	3	1.0
	Not abusing any	265	87.5

Among the respondents, 38 (12.5%) have ever used prescription drugs without medical prescription, the prescription drugs used were phenobarbitone; 5 (1.7%), diazepam 7 (2.3%), morphine 6 (2.0%) and others 24 (7.9%). Others included amoxyl, ampilicillin, emergency pills and misoprostol. The respondents were also asked whether they have ever used any of the emerging substances of abuse, 34 (11.2%) of the respondents having ever used. The emerging substances being abused were; *shisha* (n=20, 6.6%), *kuber* (n=12, 4.0%) *shashaman* (n=3, 1.0%) and others (n=3, 1.0%).

4.5 Factors Associated with Substance Abuse by Students

Among the factors associated with substance abuse among the students of medical training colleges, the findings were as presented below. The significant factors were summarized and presented in tables.

4.4.1 Sex

There were 50.5% females and 49.5% males sampled in the study. There was association between the sex of the respondents and those who have ever abused any of the substances in the study. The findings are summarized on Table 4.6

Table 4.6: Lifetime Prevalence of Any of the Substances with Sex of the Respondents

Characteristics	categories	Ever used a substance	OR (95% CI)	P value
Sex	Male	93(62.0)	1(Ref)	
	Female	66(43.1)	0.46(0.29-0.74)	0.001

The females respondents were 54% (CI=0.29-0.74, P=0.001) less likely to abuse any substance compared to the males respondents.

4.4.2 The Family History and Parental Guidance

The respondents were asked the type of family they were brought up in and also to describe the relationship between the family members. The findings are summarized on Tables 4.7

Table 4.7: Family Type and Relationship between Family Members

Characteristics	Frequency, n=303,	Percentage
Type of family		
Nuclear	194	64.0
Sibling house-hold(<18 years)	13	4.3
Single parent	51	16.8
Extended	41	13.5
Others	4	1.3
Relationship between family members		
Excellent	145	47.9
very good	81	26.7
Good	52	17.2
Fair	23	7.6
Poor	2	.7

Majority 104 (64%) of the respondents were brought up in nuclear family set up with majority 226 (74.6%) of the respondents describing their family relationship as being excellent and very

good. There was no association between the type of family and relationship with family members with substance abuse.

4.4.3 Religion

The respondents were asked their religious affiliations and the frequency of attending religious activities at the college. A clear majority 97.4% were Christians while the frequency of attending religious activities findings are summarized in Table 4.8

Table 4.8: The Frequency of Attending Religious Activities

Frequency of attending religious activities	Frequency, n=303	Percentage
Never	25	8.3
once or twice a month	75	24.8
every weekend	148	48.8
every day	11	3.6
several times a week	41	13.5
several times a day	3	1.0

Most 148 (48.8%) of the respondents attended religious activities every weekend. On the associations between religious affiliations and the frequency of attending religious activities at the college with the use/abuse of any of the substances, the findings are summarized on Table 4.9.

Table 4.9: Lifetime Prevalence of Any of the Substances with Religious Information of Respondents

Characteristics	Categories	Lifetime a substance	OR (95% CI)	P value
Religion	Christian	154 (52.2)	1(Ref)	
	Muslim	2 (40.0)	0.61(0.10-3.71)	0.592
Attendance of religious activities	Never	18(72.0)	1(Ref)	
	Once or twice monthly	51(68.0)	0.83(0.30-2.24)	0.708
	Every weekend	69(46.6)	0.34(0.13-0.86)	0.023
	Every day	6(54.5)	0.47(0.11-2.04)	0.311
	Several times a week	15(36.6)	0.22(0.08-0.66)	0.007

There were no association between religious affiliations and abuse of the any substances of abuse, however there was on attendance of religious activities. The respondents who attended religious activities every weekend and several times a week were 66% (CI=0.13-0.84, P=0.023) and 78 % (CI=0.08-0.66, P=0.007) less likely to abuse any of the substances under the study respectively.

4.4.4 Psychological Factors

The respondents' perception of the stress in their lives was as follows: no stress (n=36, 11.9%), little deal stress (n=85, 28.1%), moderate deal stress (n=139, 45.9%), great deal stress (n=24, 7.9%) and a very great deal stress (n=19, 6.3%). On the association between alcohol use and the respondents' perception on the stress in their life, the findings are summarized on Table 4.10.

Table 4.10: Alcohol Use with the Respondent Perception on the Stress in their Life

	Alcohol use				
characteristics	Yes	No	OR	CI	P value
Stress levels					
No stress	6(16.7)	30(83.3)	1		
Little deal of stress	22(25.9)	63(74.1)	1.75	0.64-4.76	0.276
Moderate deal of stress	39(28.1)	100(71.9)	1.95	0.75-5.05	0.169
Great deal of stress	8(33.3)	16(66.7)	2.5	0.74-8.47	0.141
Very great deal of stress	8(42.1)	11(57.9)	3.64	1.03-12.87	0.045

The respondents who perceived a great deal of stress were 3.64 (P=0.045) times more likely to drink alcohol compared with those respondents who perceived no stress.

4.4.5 History of Respondent

The respondents were asked whether they have ever been abused, 106 (35.0%) answered yes. They were further asked the type of abuse they encountered, the responses were as follows: physical 16 (5.3%), verbal 48 (15.8%), psychological 34 (11.2%), sexual 11(3.6%) and multiple abuses 8 (2.6%). The respondents were also asked the place of abuse: 25 (8.3%) said they were abused at home, 76 (25.1%) at learning institutions and at other areas 11 (3.6%) (highway and bars). The respondents were also asked who had abused them at home: four (1.3%) said they were abused by the mother, the father (n=8, 2.6%), brothers/sisters (n=16, 5.3%), other relatives (n=30, 9.9%), guardian (n=6, 2.0%) and others (n=7, 2.3%). The respondents were further asked

who had abused them at learning institution, 78 (25.7%) of the respondents were abused by fellow students, teachers (n= 16, 5.3%), other learning institution's staff apart from teachers (n=7, 2.3%) and others (n=6, 2.0%). There were no association between individual history of being abused and abuse of any the substances in the study.

4.4.6 The Media

The respondents were asked the source of information they thought was contributing to substance abuse, accessibility to social media, average time spent in social media and influence of social media. The findings were as presented in the following sub subsections.

4.4.6.1 Source of Information Contributing to Substance Abuse

According to the opinions of the respondents, the sources of information contributing to substance abuse were as follows: print (n=5, 1.7%), radio (n=3, 1.0%), movies (n=98, 32.3%), television (n=38, 12.5%), internet (n=129, 42.6%) and did not know (n= 30, 9.9%).

4.4.6.2 Access to Social Media

The respondents were asked whether they had access to Facebook, Twitter or any other social media, the majority (n= 280, 92.4%) of them had access while only (n=23, 7.6%) were not. The respondents were asked the average time spent social media by the students in 24 hours. The findings are summarized in Figure 5.

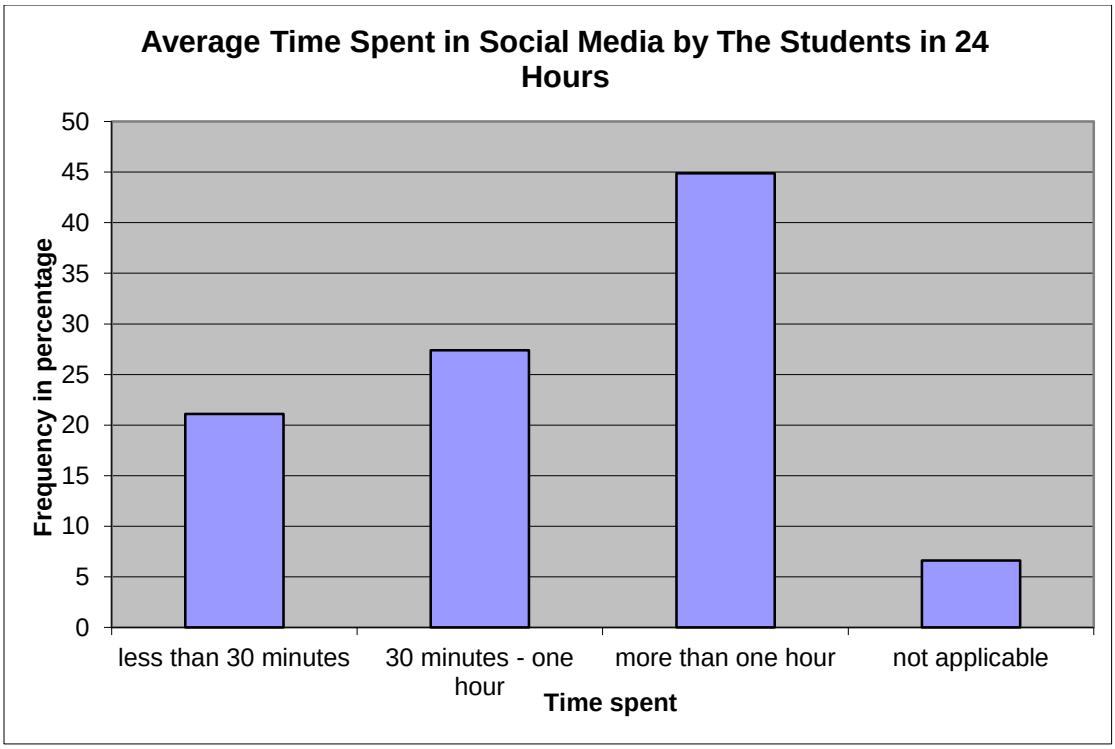

Figure 4.1: The Average Time Spent in Social Media by the Respondents in 24 Hours

The average time they were spending on social media in 24 hours, the responses were as follows: less than 30 minutes (n=64, 21.1%), 30 minutes to one hour (n= 83, 27.4%) and more than one hour (n=136, 44.9%). There was an association between alcohol use and time spent in social media. The findings is summarized in Table 4.11

Table 4.11: Alcohol Use with the Average Time Spent in Social Media by the Students in 24 hours

	Alcohol use				
Average time spent in social media	Yes	No	OR	CI	P value
<30 minutes	8(12.5)	56(87.5)	1		
30 minutes-1 hour	18(21.7)	65(78.3)	1.94	0.78-4.80	0.152
> 1 hour	53(39.0)	83(61.0)	4.47	1.97-10.12	0

The respondents who spent more than one hour in social media were 4.47 (P<0.001) times more likely to drink alcohol compared with those respondents who spent less than 30 minutes.

4.4.6.3 Influence of Social Networking Sites

The respondents were asked whether they had seen pictures of persons on social networking sites abusing substances, majority (n=247, 81.5%) reported to have seen the pictures, when asked further their opinion on the pictures, 232 (76.6%) of them said the pictures seen on social networking sites could influence students to abuse substances.

4.4.7 Extracurricular Activities

The extracurricular activities that the respondents participated in were as follows: sports (n=143, 47.2%), club activities (n=23, 7.6%), community activities (n=24, 7.9%), choir (n=70, 23.1%), others (n= 7, 2.3%) and none (n=36, 11.9%). There was association between extracurricular activities and abuse of substance as shown in Table 4.12.

Table 4.12: Alcohol and Tobacco Abuse with Respondents' Extracurricular Activities

	Alcohol use				
	Yes	No	OR	CI	P value
Extracurricular activities					
Sports	48(33.6)	95(66.4)	1		
Club activities	7(30.4)	16(69.6)	0.87	0.33-2.25	0.767
Community activities	9(37.5)	15(62.5)	1.19	0.48-2.91	0.707
Choir	7(10.0)	63(90.0)	0.22	0.09-0.52	0.001
None	9(25.0)	27(75.0)	0.66	0.29-1.51	0.326
Others	3(42.9)	4(57.1)	1.48	0.32-6.90	0.614
	Tobacco use				
	Yes	No	OR	CI	P value
Extracurricular activities					
Sports	2(1.4)	141(98.6)	1		
Club activities	3(13.0)	20(87.0)	10.58	1.66-67.22	0.012
Community activities	0(0.0)	24(100.0)	1		
Choir	0(0.0)	70(100.0)	1		
None	2(5.6)	34(94.4)	4.15	0.56-30.50	0.162
Others	1(14.3)	6(85.7)	11.75	0.93-148.34	0.057

The results showed that respondents participating in choir were 78% (OR=0.22, P=0.001) less likely to use alcoholic drinks compared to those who participate in sporting activities. The results also showed that respondents who participate in club activities were 10.58 (P=0.012) times more likely to use tobacco compared with those respondents participating in sporting activities.

CHAPTER FIVE
DISCUSSION

5.1 Introduction

This chapter is on discussion of the major findings of the study. It has been organized according to the specific objectives of the study. Comparisons have been made between the relevant findings of the study and other studies.

5.2 The Substances Abused by Students in Medical Training Colleges

There is considerable variation in the legal and illegal substance use among youth between countries (Simbee, 2012). Overally, the study established that the abused substances were alcohol, tobacco, miraa, marijuana, heroin, prescription drugs, *shisha* and *kuber*. This finding concurs with worldwide statistics from United Nations Office of Drugs and Crimes (UNODC) (2010) report, which showed that the most abused substances in the world were tobacco, alcohol, khat (miraa), marijuana (bhang), and heroin. In the continental front, the study agrees with a study in Durban, South Africa, among adolescent respondents which found alcohol to be the second most commonly abused substance, followed by marijuana (Ghuman. S. Meyer-Weitz, 2012). In Kenya, it was estimated that 13% of the total population consumed of alcohol. Other substances abused in the country include marijuana, miraa, heroine, tobacco among others (NACADA, 2010), which was a reflection of this study.

5.3 Prevalence of the Abused Substances by the Students in Medical Training Colleges

The study found a lifetime prevalence rate of 52.5% of any one of the substances used/abused. This was however slightly lower than 69.8 % which was found among the colleges students in Eldoret, Western Kenya and higher than the prevalence rate of 41% found among high schools in Kenya (Atwoli, 2011). This finding was significantly high as also found in other settings. This may imply that substance abuse rates increase with transition through the education system and could have a major policy implication such as need to focus substance abuse interventions to younger age groups examples primary and secondary schools students. There was a statistically significant difference in the lifetime substance abuse prevalence rates between males and females, with males having a higher rate than females. This is consistent with what has been

found in Nigeria by (Odeyemi, 2014) and may reflect a more tolerant social attitude males have compared to females on substance abuse (Atwoli, 2011).

5.3.1 Alcohol

The study findings established that slightly more than half (52.5%) of the respondents have ever taken alcohol while 27.4% were still taking alcohol at the time of the study. This was expected as alcohol is widely available to adults and its use is legal and accepted in many societies, including the region of the study. This was consistent with a study by Otieno, (2009) in Kisumu, Western Kenya, which showed that 57.9% of secondary school students had consumed alcohol at least once in their lives. The current use was consistent with National Campaign Against Drug Abuse (NACADA) report (2010) that showed that the prevalence of alcohol in Nyanza was 26.8%. The result of this study however slightly differed with another NACADA report (2012) which showed that 30% of Kenyan population, aged between 15 – 65 years have ever used an alcoholic drink. The study findings also differed with some studies in other parts of the world such as in United States of America (USA) where the prevalence of alcohol consumption among medical students was 20% (Halldorsson, 2006). The high prevalence implies that alcohol use was probably still regarded as being fashionable among college students and very few social sanctions existed to discourage this behaviour. Chances of moving from use to abuse and dependence were therefore heightened, especially considering other factors such as age of respondents and current use.

5.3.2 Tobacco

Cigarette smoking was prevalent among students of health care professions (Elamin, 2013). The study found the prevalence of tobacco among students who have ever used it was 12.2% while 2.6% were still using it. The lifetime prevalence of this study almost concurs with the national average for the tobacco consumption among adult which was at 14% (NACADA, 2012). This, was however, lower than the findings by Otieno, (2009) among secondary school students in Kisumu, Western Kenya, which showed that 34.7% of the respondents had abused tobacco. Compared to studies outside the country, the findings differed with a study among medical students at the University College of Medicine in Abha, Saudi Arabia which showed that regular smoking had a prevalence rate of 13.6% (Elamin, 2013). Another study on cigarette smoking

among medical students in The National Ribat University in Sudan also found the prevalence of smoking to be at 10% (Elamin, 2013). Study by Otieno (2012) focused on adolescents in high school, raising the possibility that the rates of cigarette use decreased after admission of students to medical training colleges. This could probably because smoking is outlawed in learning institutions in Kenya, as well as in most public places.

5.3.4 Khat (Miraa)

Seventeen and half percent (17.5%) of the respondents have ever chewed khat while 3.6% were still chewing it at the time of study. This almost concurs with a student among secondary schools in Kisumu, Western Kenya by Otieno, (2009) which showed that 23.1% of the respondents had abused khat. This was however higher compared to national findings by NACADA (2012), which showed that the prevalence of khat in Kenya, for persons aged 15-65 years was at 8.9% and among young people aged 15-24, at 4.7%, which almost concurred with the current users of this study. On the regional front, it was lower compared in a study in Ethiopia, which showed that the prevalence of khat use was at 50%, among the adult population (Basker, 2013) and among college students in North West Ethiopia revealed that life time and current prevalence rate of Khat chewing were 26.7 % and 17.5 % respectively (Wazema, 2015).

5.3.5 Cannabis (bhang)

Cannabis remains the world's most widely produced and used illicit substance. This study established that 9.2% of the respondents have ever used cannabis while (2.0%) of the respondents were still using it. This was lower than in findings by Otieno, (2009) among secondary schools in Kisumu Town, Western Kenya, which showed that 18.3% of the respondents had abused cannabis. The lifetime prevalence was higher in this study compared to national prevalence by NACADA (2012) which showed that 5.4% of persons 15-65 years had reported ever using cannabis. The current prevalence use of this study was slightly higher compared to a study to assess substance abuse amongst the medical students in India which was at 4% (Karamat, 2011). Cannabis abuse was lower than reported in other comparable studies, this is an interesting point as cannabis remains the world's widely produced illicit substance. It was possible that high profile seizure of cannabis along Kisii – Migori route could have made its use, less of an adventurous pursuit and hence less popular to the student population.

Additionally, students may be becoming more aware of health risks of cannabis use and hence are refraining from its use.

5.3.7 Prescription Drugs

Prescription drug abuse is an enormous problem in modern society resulting to in more injuries and deaths than all illegal drugs combined (Halldorsson, 2006). The results of this study showed that 12.5% of the respondents admitted ever using prescription drugs without medical reason. The prescription drugs abused were phenobarbitone 1.7%, diazepam 2.0%, morphine 2.3% and others at 6.6%. The others were emergency pills, misoprostol and antibiotics. A study by NACADA (2012) showed that prescription drugs were most easily accessible in Nairobi (54.6%) followed by Nyanza (45.2%). The same study found that the respondents lifetime prevalence of prescription drug use without medical reason were below 1% among the general population. The findings of this study concurred with Halldorsson (2006) which stated that prescription drug abuse, specifically benzodiazepines (diazepam) and opiates (morphine), was higher among medics than in the general population. It also concurs with findings a study which found that benzodiazepines were the most frequently used sedative-hypnotics among medical students (Akvardar, 2004). Globally, the prevalence of prescription drug abuse escalated rapidly beginning in the late 1990s in the United States and the abuse has reached an epidemic level, with about one in four college students having illegally used prescription drugs, and many more having been offered these medications by friends or fellow students (Wunsch, 2009). The lower prevalence in this study may not be a reflection of the national view compared with accessibility findings from NACADA (2012). The possibility of under-reporting cannot be discounted, given that the participants in this study were students who may have been reluctant to reveal their habits despite assurance of anonymity. Moreover, prescription drugs could fairly be accessible to medical training college students, who most often find these drugs at the clinical area.

5.3.6 Emerging Substances of Abuse.

This study found the respondents who have ever used emerging substances of abuse were 11.2%. The emerging substances of abuse used were *shisha* 6.6%, *kuber* 4.0% *shashaman* 1.0% and others 1.0% (cocaine, barbarian beer). This agreed with a study Kahuthia-Gathu, (2013) which found out that *shisha* and *kuber* were the most commonly abused drugs in Nairobi and Mombasa. NACADA (2011) found the prevalence of *kuber* in Nairobi among secondary school students at

5.5%. This study slightly differs with a study by Simatwa (2014) which found the prevalence of *kuber at* 2.9% among the secondary school students of Kisumu East Sub County. The respondents had also abused other substances such as heroin. Those who have ever used heroin were 1.3% and the same percentage of the respondents was still using it. This almost concurs with NACADA (2012) where those who have ever used of heroin among those aged 15-65 years were 0.7%. Elsewhere, a study to assess substance abuse among college students in Amhara Ethiopia, found prevalence rate of heroin at 0.2% (Aklog, 2013). Generally, the findings on the substance abused and the abuse rate appeared consistent with the previous studies.

5.4 Factors Associated with Substance Abuse by Students in Medical Training Colleges

The factors studied were as presented in the following subsections.

5.4.1 Sex of Respondents

The study sampled 50.5% female respondents and 49.5% male respondents. Results showed that female respondents were 54% (OR=0.46, P=0.001) less likely to use alcoholic drinks compared with male respondents. This concurs with a study done in Kenyan workplace which found significant differences in prevalence of substance abuse among the sexes with more men than women being engaged in the usage of each of the drugs (NACADA, 2012). Elsewhere, outside the country, a study to assess substance abuse amongst the medical students in India, Karamat (2011) concurred with this study by finding the prevalence of those who abuse substances to be significantly ($P<0.001$) higher in males (30%) as compared to females (11.67%). In Nigeria, among 240 students of College of Medicine, University of Lagos, alcohol consumption was also more prevalent among males than females ($p<0.05$) (Odeyemi, 2014). The statistically significant difference in the substance abuse prevalence rates between males and females, with males having a higher rate than females is consistent with what has been found in other studies, and may reflect a more tolerant social attitude males have compared to females on substance abuse.

5.4.2 The Family History and Parental Guidance

The study showed that 64.0% of the respondents were brought up in the nuclear family set up, while sibling house-hold were 4.3%, single parent 16.8%, extended family 13.5% and others were 1.3%. The results showed no association between the type of family and substances abused. A study done in South Africa, which found out that those learners who indicated that they did not experience high levels of support from their families, had many of them exposed to substance abuse (Visser, 2003). A report noted that appropriate parental guidance and monitoring could reduce future substance abuse, even among adolescents who may be prone to abuse, such as those who are rebellious and those experiencing internal distress (Office of National Drug Control Policy, 2004). This could explain the low prevalence of substance abuse in this study.

5.4.3 Religion

There is strong empirical link between substance use and a variety of problems that adversely impact adolescent health such as motor vehicle accidents, school problems, delinquency and researchers have invested considerable effort in the identification of risk and protective factors for the use and abuse of alcohol, tobacco, and other drugs (Wallace, 2003). Ninety seven percent point four percent (97.4%) of the respondents were Christians, Islam were 1.7%, African Traditional Religion were 0.3%) and others were 0.7%. The results showed no association between religion and substances abused, but there was on attendance of religious activities. The respondents who attended religious activities every weekend and several times a week were 66% (CI=0.13-0.84, P=0.023) and 78 % (CI=0.08-0.66, P=0.007) less likely to abuse any of the substance in the study respectively. A study noted that over 80% of studies examine only one variable in this aspect, usually affiliation (Kendler, 1997). Such single measures are problematic because religiosity is multidimensional, including aspects of affiliation, devotion, and beliefs. It is strongly familial and resemblance in siblings is due largely to shared environmental exposure to the religious beliefs of parents, peer group, and community (Kendler, 1997). Among 240 students of College of Medicine, University of Lagos, Nigeria, those that did not consume alcohol, their major reason for not doing so was related to religion where 66.3% of them did not do so because it was against their religious beliefs (Odeyemi, 2014). This was in agreement with a study carried out among medical students in the United States of America which also stated

that strong religious identity was associated with abstinence from alcohol (Odeyemi, 2014). Young people who were more religiously engaged for example by attending religious services or saying religion is important were less likely to use drugs than the less religiously engaged counterparts. The more religiously engaged also consistently report lower levels of drug use than young people who were less religious (Kendler, 1997). This could explain the low prevalence of substance abuse in this study.

5.4.4 Psychological Factors

The study found out that 11.9% of the respondents perceive no stress in their life while 88.1% perceive varied deal of stress. This concurs with studies by Dyrbye, (2005) and Naidoo, (2012) which found out that medical college students experienced substantial stress during the training process. It further stated that for many individuals, stress arouses feelings of fear, incompetence, uselessness, anger, and guilt and could contribute to both psychological and physical morbidity. This could lead to substance abuse as seen in the association which showed that respondents who experienced a great deal of stress were 3.64 (P=0.045) times more likely to drink alcohol compared with those respondents who have no stress. It also agrees with another study by Mokua (2012) that psychological stress and the overwhelming availability of drugs with the potential abuse offer a tempting respite for college students. It also agreed with a study to assess substance abuse amongst the medical students in India, where the most common reason reported for using such substances of abuse was relief from psychological stress at 72.4% (Karamat, 2011). A study by Halldorsson (2006) suggested that heavy demands during medical training contributed to substance abuse and pointed out that the trends toward addiction start very early in many medics, although it is not diagnosed until later on.

5.4.5 History of Respondent Abuse

The study showed that 35.0% of the respondents had been abused. The type of abuse encountered included physical, verbal, psychological, sexual and multiple abuses. Several narrative reviews had shown that there were higher rates of child sexual abuse among people who abuse alcohol and other drugs (Maniglio, 2011). Some of these reviews have stated that survivors of early sexual victimization were at increased risk of abusing drugs, with some reviews, strongly implying a causal relationship between child sexual abuse and later development of substance abuse (Maniglio, 2011). This also agreed with the findings from

studies which showed that persons with abuse histories often were more prone to substance abuse (Ouimette, 2008).

5.4.6 The Media

The study found out that the source of information contributing to substance abuse as per the respondents were as follows: print, radio, movies, television and internet. This agreed with a study in Colombia which showed that much of the substance abuse information was accessed through television, and increasingly the internet, where youth viewed pictures other youth of their own age partying with alcohol, marijuana and smoking substances (University of Colombia, 2012). It partly concurs with research on students of College of Medicine, University of Lagos, Nigeria, where their major sources of information on substance use were television, radio and books. The least represented source of information was from family members while the media has a major sway on substance use among young people (Odeyemi, 2014).

The study found that majority (92.4%)of the respondents had access to social media with the average time spent on social media in 24 hours follows; less than 30 minutes (21.1%), 30 minutes to one hour (27.4%), and more than one hour (44.9%). The study revealed that respondents who spent more than one hour in social media were 4.47 ($P<0.01$) times more likely to drink alcohol compared with those respondents who spent less than 30 minutes. This agrees with other studies which showed that social media influenced students to abuse substances. For example, in the early days of Facebook at the University of Nebraska, there were over 500 Facebook groups which were involved some form of college drinking and partying (The Higher Education Center for Alcohol, Drug Abuse, and Violence Prevention, 2011). In another study at Los Angeles, USA, in a typical day, 70% of teenagers ages 12 to 17 years spent from a minute to hours on Facebook and other social networking sites. For this same age bracket, the social-network-savvy teens were five times more likely to use tobacco; three times more likely to use alcohol; and twice as likely to use marijuana than teens who did not spend any of their day on social networking sites (Anzuoni, 2009).

On pictures of persons on social networking site abusing substances, the study found out that majority 81.5% the respondents had seen pictures of persons on social networking site abusing substances. The findings agreed with a study among university students in Netherlands which

indicated that substance abuse by leading characters in movies and soaps increased social acceptance of substance abuse and fostered initial and continued substance abuse among young people (Engels, 2009). Also in the study, majority (76.6%) of the respondents said the pictures seen on social networking site could influence students to abuse substances. This agrees with a study that has reported associations between recall of alcohol use in the media outlet and outcomes like alcohol expectancies, consumption or argues (The Higher Education Center for Alcohol, Drug Abuse, and Violence Prevention, 2011).

5.4.7 Extracurricular Activities

The study found out that those respondents participating in choir were 78% (OR=0.22, P=0.001) less likely to use alcohol compared to those who participated in sporting activities. The results also showed that respondents who participated in club activities were 10.58 (P=0.012) times more likely to use tobacco compared with those respondents participating in sporting activities. This agreed with a study in USA by Rebecca (2014) which found that extracurricular activities could either be contributing or protective factor to substance abuse. Students who participated in such activities such as sports, church, clubs and service work in the college, community and government were less likely to abuse drugs or alcohol (www.ehow.com/facts, accessed on 13/2/2014). It concurs with the fact that extracurricular activities replenishes student by multiple inputs, including psychosocial support, social activities, mentorship, and intellectual stimulation.

Medical school administrations through, extracurricular programs and the creation of a supportive “cultural” environment could buttress the internal structure of students’ reservoirs. By strengthening the internal structure of the student, extracurricular activities also promote resilience and personal growth (Dunn, 2008).

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 The Substances Abused by Students in Medical Training Colleges

The study established that there were legal and illegal substances used/ abused by the students in medical training colleges. Alcohol was the most used substance. Others were tobacco, khat, marijuana, heroin, diazepam, morphine, *kuber* and *shisha*.

6.1.2 Prevalence of Substances Abused by Students in Medical Training Colleges

The study established that the lifetime prevalence of any one of the substances was 52.5%. It also established that respondents who have ever used alcohol were also 52.5%, while 27.4% were still using it at the time of study. The lifetime and current prevalence rate of other substances respectively were as follows: tobacco 12.2%, 2.6%; khat 17.5%, 3.6%; and marijuana, 9.2%, 2.0%. The emerging substances being abused were mainly *shisha* 6.6% and *kuber* 4.0%.

6.1.3 Factors Influencing Substance Abuse by Students in Medical Training Colleges

The study established the factors associated with substance abuse were the sex of the respondents, perception of stress by respondents, use of social media and participation in extracurricular activities such as choir and club activities.

6.2 Recommendations

6.2.1 Government agencies such as NACADA could consider on family-focused interventions, example television program to educate general population on good parenting behaviour that could reduce all forms of abuse among children.

6.2.2 Stakeholder such as colleges and parental organizations involved in substance abuse prevention could deliver prevention messages through various channels of communication including internet, print media, videotapes, and social media.

6.2.3 Colleges could implement strategies that promote extracurricular activities such as choir to reduce the risk of substance abuse.

6.3 Suggestions for Future Research

Drawing from the findings of the study, and building on existing research, it is suggested that more studies be carried out to address the following:

6.3.1 More investigations are needed on the impact of specific social media channels of communication on substance abuse among the youth colleges in Kenya. This could aid in mitigation strategies on substance abuse prevention.

6.3.2 Apart from the commonly abused substances noted in this study, others such as antibiotics and contraceptive were mention by respondents. This could be investigated to determine the extent and frequency of their abuse among MTC students.

6.3.3 A similar study should be done in other institutions of learning like primary and secondary schools in the region for comparison of findings.

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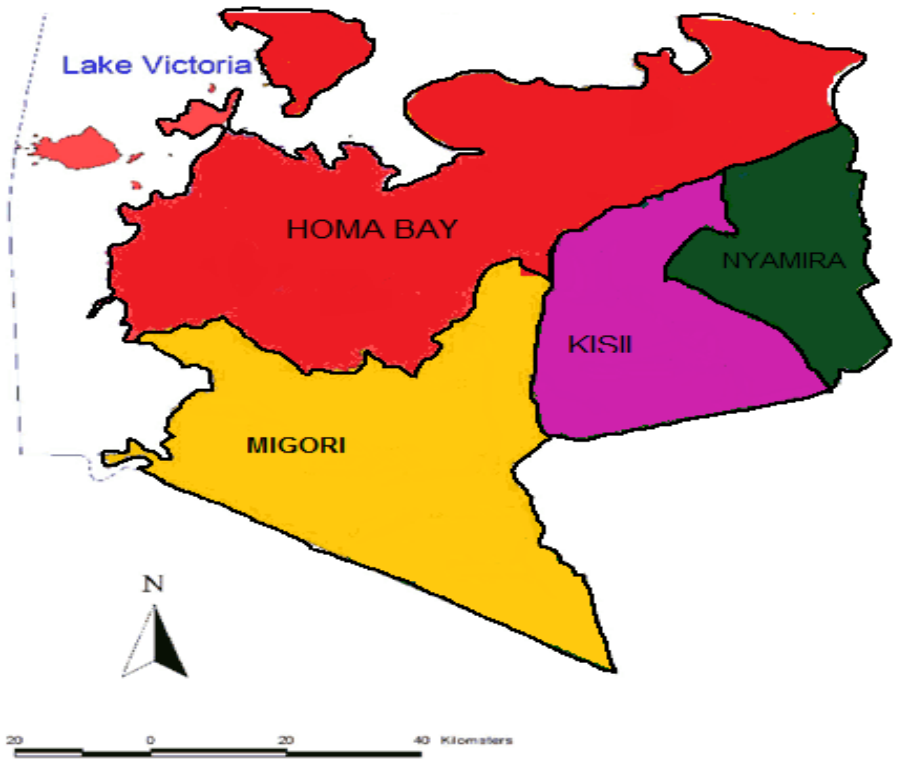
APPENDICES

APPENDIX A: MAP OF SOUTH NYANZA REGION (STUDY SITE).



APPENDIX B: QUESTIONNAIRE

INSTRUCTIONS:

- Please put a circle on the alphabet next to the answer of your choice or write in the space provided as the case may be.
- Kindly answer all questions appropriately.

PART A: SOCIO DEMOGRAPHIC INFORMATION

1. ***Indicate your Sex***
   a. Male
   b. Female

2. ***Indicate your Age***
   a. 15 – 23
   b. 24 – 33
   c. > 34

3. ***Indicate your Religion***
   a. Christian
   b. Islam
   c. African Traditional Religion
   d. Others (Specify)……..

4. ***Indicate your marital status***
   a. Single
   b. Married
   c. Separated/divorced
   d. Windowed
   e. Others ----------

5. ***Which program are you undertaking?***
   a. Clinical medicine
   b. Nursing sciences
   c. Physiotherapy
   d. Laboratory sciences
   e. Community Nutrition
   f. Pharmacy
   g. Others(Specify)-------

6. Which is your year of study?

a. First
b. Second
c. Third
d. Four

7. What kind of secondary school did you attend:

a. public,
b. private but not religious,
c. religiously-affiliated to Protestants
d. religiously-affiliated to Catholic
e. religiously-affiliated to Islam
f. Others (specify)…….

8. What type of family do you come from?

a. Nuclear
b. Sibling house-hold
c. Single parent
d. Extended
e. Others (Specify)…….

9. How would you describe your relationship with your family members?

a. Excellent
b. Very Good
c. Good
d. Fair
e. Poor
f. Others (Specify)…

10. While at college, how often do you attend church or religious services?

a. Never
b. Once or twice a month
c. Every weekend
d. Every day
e. Several times a week
f. Several times a day

PART B: THE SUBSTANCES FOR POTENTIAL ABUSE BY STUDENTS

11. Do you think substance abuse is a problem in your college?

a. Yes
b. No
c. Do not know

12. ***Have you ever in your life had a drink of beer, wine or other alcoholic beverage? By drink I mean a whole glass or can, not just a sip or two***.

a. Yes
b. No

13. Do you currently use beer, wine alcohol at your free time?

a. Yes
b. No

14. Have you ever in your life smoked or chewed tobacco?

a. Yes
b. no

15. Do you currently smoke or chew tobacco at your free time?

a. Yes
b. No

16. Have you ever in your life chew khat (miraa)?

a. Yes
b. no

17. ***Do you currently chew khat*** (miraa) ***at your free time?***

a. Yes
b. No

18. Have you ever in your life used marijuana?

c. Yes
d. no

19. Do you currently use marijuana at your free time?

a. Yes
b. No

20. Have you ever in your life used heroin?

a. Yes b. No

21. Do you currently use heroin at your free time?

a. Yes b. No

22. Have you ever in your life used a prescription drug without a medical reason or prescription?

a. Yes b. No

23. Which of the prescription drugs do you currently or at times use without prescription

a. Phenobarbitone
b. Diazepam (valium)
c. Chlorampheramine (piriton)
d. Morphine
e. Others (specify),,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
f. Not applicable

24. Have you ever in your life used any of the following emerging drugs (shisha, Kuber , shashamanetc)

a. Yes b. No

25. ***Which of the following emerging drugs do you currently use?***

a. Shisha,
b. Kuber ,
c. Shashaman
d. Others (specify)……
e. Not applicable

PART C: FACTORS INFLUENCING SUBSTANCE ABUSE BY STUDENTS

26. Are drugs easily available to students in the college?

a. +Yes
b. No
c. Not sure

27. Is there a place on college grounds where students go to smoke, drink, or use drugs during the college days?

a. Yes
b. No
c. Do not know

28. Is there a place near the college where students go to smoke, drink, or use drugs during the college days?

a. Yes
b. No
c. Do not know

29. Do you know a friend or college mate who abuse substances?

a. Yes, know one
b. Yes, know more than one
c. Do not know anyone who uses these drugs

30. ***In your opinion, what do you think is the main reason why students of your age abuse substances?***

a. To relieve stress
b. when they feel depressed, sad or lonely
c. to have fun
d. peer pressure
e. To have sex
f. Others (Specify)
g. Do not know

31. How do you get your alcohol or other drugs?

a. Supplied by parents or guardian
b. get from friends
c. from brothers or sisters
d. buy my own (on the street)
e. from home without parents' knowledge

f. Not applicable.

32. Who introduced you to drugs for the first time?

a. Friends
b. Family members
c. Others……..
d. Self
e. Not applicable

33. Why did you take your first drink or first use drugs?

a. curiosity
b. parents or relatives offered
c. friends encouraged me
d. to have fun
e. to get away from my problems
f. to get high or drunk
g. To have sex
h. Not applicable

34. When you take alcoholic drinks, how much do you usually take?

a. 1 drink
b. 2 drinks
c. 3-4 drinks
d. 5 -9 drinks
e. 10 or more drinks
f. None

35. Have you ever been abused?

a. Yes
b. No

36. If yes, which kind abuse was it?

a. Physical
b. Verbal
c. Psychological
d. Sexual
e. All the above
f. Not applicable

37. If abused, where were you abused?

a. Home
b. learning institutions
c. Other areas (specify)……
d. Not applicable

38. If abused at learning institutions, who was the abuser?

a. Teachers
b. Fellow students
c. Other institutions staff apart from teachers
d. Others (Specify)……..
e. Not applicable

39. If abused at home, who was the abuser?

f. Mother
g. Father
h. Brother/sister
i. Other relatives
j. Guardian
k. Others (Specify)……..
l. Not applicable

40. In your opinion, which of the following source of information contributes to substance abuse?

3. Print
4. Radio
5. Movies
6. Television
7. Internet
8. Do not know

41. Do you have access to Facebook, Twitter, MySpace or any other social media?

3 Yes
4 No

42. In a day (24 hours), how much time in average do you spent in social media?

5 Less than 30 minutes
6 30 minutes – one hour
7 More than one hour.
8 Not applicable

43. Have you ever seen pictures on Facebook, Twitter, MySpace or another social networkingsite of students getting drunk, or passed out, or using drugs?

a. Yes
b. No
c. No applicable

44. Do you think that seeing pictures on Facebook, Twitter, MySpace or another socialnetworking site of youth using alcohol, marijuana etc encourages other students to want to use drugs?

6 Yes
7 No
8 Not sure

45. How much stress is there in your life?

a. No stress
b. Little deal stress
c. Moderate deal stress
d. Great deal stress
e. Very great deal stress

46. ***What is the biggest source of stress for you?***

a. Academics/doing well in college
b. Balancing school and other activities
c. Family/home issues
d. Social pressures (popularity/fitting in)
e. Financial issues
f. Others (Specify)……
g. None/nothing
h. Do not know

47. Which of the following extracurricular activities do you participate in?

a. Sports
b. Club activities
c. Community activities
d. Choir
e. None
f. Others (specify) ----------

48. What do you think can be done to solve the drug abuse problem among student in thecollege?

a. Greater education of young people on substance

b. The establishment of youth groups and clubs
c. The establishment of recreational facilities
d. The passage of stricter laws against drugs
e. Greater parental/tutor guidance
f. Others (specify) ……

APPENDIX C: RESPONDENT CONSENT FORM

Dear Respondent,

I am a Student in the department of Public Health at Maseno University, carrying out a research study entitled 'Assessment of Prevalence and Factors Associated with Substance Abuse by Students in Medical training colleges in South Nyanza Region, Kenya'. The study aims at assessing the prevalence and factors associated with substance abuse among students in five (5) Medical training colleges in South Nyanza Region, Kenya. The specific objectives are to identify abused substances, determine their prevalence and factors contributing to substance abuse by those students.

I am undertaking the research for academic purposes, inferences drawn from the findings will be used to make positive contributions, relevant recommendations and influence colleges' action for positive changes. Note that as a respondent, you are allowed to take part in the study on a voluntary basis and you could stop participating at any time if conditions compel you to do so. The information you give in this exercise will be treated confidentially.

The MUERC secretariat can be contact in case of any queries.

Maseno University Ethical Research Committee (MUERC)

P. O Private Bag, MASENO. Secretary Cell phone. +254721543976; +25473323087

Email:sbonuke@gmail.com.

Thank you for accepting to participate in filling this questionnaire and to be interviewed.

Yours faithfully,

Kurui D. Kipchumba.

Cell phone. +254721519334

Participant signature ……. Date ……..

APPENDIX D: LETTER OF APPROVAL FROM THE SCHOOL OF GRADUATE STUDIES

MASENO UNIVERSITY
SCHOOL OF GRADUATE STUDIES
Office of the Dean

Our Ref: PG/MPH/6010/2011

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 19th November, 2014

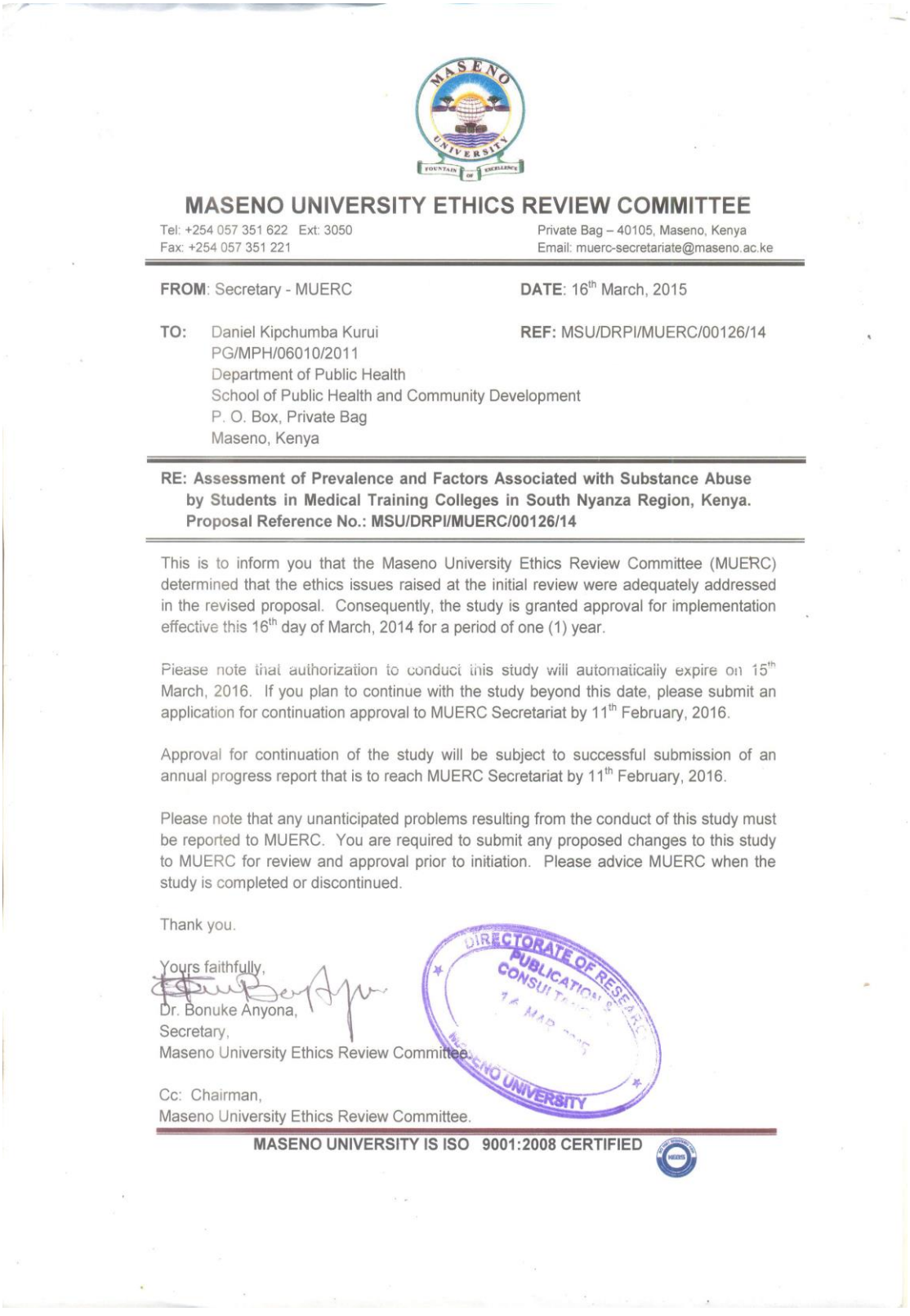
TO WHOM IT MAY CONCERN

RE: PROPOSAL APPROVAL FOR KIRUI DANIEL KIPCHUMBA — PG/MPH/6010/2011

The above named is registered in the Master of Public Health Programme of the School of Public Health & Community Development, Maseno University. This is to confirm that his research proposal titled "*Assessment of Prevalence and Factors Associated with Substance Abuse by Students in Medical Training Colleges in South Nyanza region, Kenya*" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.

Dr. Pauline Andang'o
ASSOCIATE DEAN, SCHOOL OF GRADUATE STUDIES

APPENDIX E: MUERC APROVAL



MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

FROM: Secretary - MUERC

DATE: 16th March, 2015

TO: Daniel Kipchumba Kurui
PG/MPH/06010/2011
Department of Public Health
School of Public Health and Community Development
P. O. Box, Private Bag
Maseno, Kenya

REF: MSU/DRPI/MUERC/00126/14

RE: Assessment of Prevalence and Factors Associated with Substance Abuse by Students in Medical Training Colleges in South Nyanza Region, Kenya. Proposal Reference No.: MSU/DRPI/MUERC/00126/14

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 16th day of March, 2014 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 15th March, 2016. If you plan to continue with the study beyond this date, please submit an application for continuation approval to MUERC Secretariat by 11th February, 2016.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach MUERC Secretariat by 11th February, 2016.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to MUERC for review and approval prior to initiation. Please advice MUERC when the study is completed or discontinued.

Thank you.

Yours faithfully,

Dr. Bonuke Anyona,
Secretary,
Maseno University Ethics Review Committee.

Cc: Chairman,
Maseno University Ethics Review Committee.

DIRECTORATE OF RESEARCH PUBLICATION & CONSULTANCY
MASENO UNIVERSITY

MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED

APPENDIX F: AUTHORIZATION LETTER FROM DIRECTOR KMTC

Telegrams: "MEDTRAIN" Nairobi
TELEPHONE: NAIROBI 2725191, 2725711/14
Fax: 2722907 Email: info@kmtc.ac.ke
Please address all correspondence to:
The Director
When replying please quote
KMTC/ADM/74/VOL.III
Ref: No. .....

KENYA MEDICAL TRAINING COLLEGE
P.O. BOX 30195-00100
NAIROBI

4th May, 2015
Date.....

Daniel Kipchumba Kurui
P O Box 512-40300
HOMA BAY

PERMISSION TO COLLECT DATA

We acknowledge receipt of your letter dated 20th March, 2015 requesting for authorization to carry out your research proposal on "***Assessment of Prevalence and Factors Associated with Substance Abuse by Students in Medical training Colleges in South Nyanza Region, Kenya "*** with thanks.

This is to inform you that your request has been granted. On completion of the study, you are expected to submit one (1) Hard and a Soft copy of the research report to the Director's office.

Peter K. Tum
DIRECTOR

KMTC ISO 9001:2008 CERTIFIED

APPENDIX G: AUTHORIZATION TO PRETEST THE QUESTIONAIRE

TELEPHONE: KISUMU - 2523941
FAX: No. 057-2523941
Please address all correspondences to:
The Principal
When replying please quote

"Mens sana in corpore sano"

KENYA MEDICAL TRAINING COLLEGE
P. O. BOX 1594
KISUMU

6th May 2015

KMTC/KSM/GE.COR/VOL.II/36

Daniel Kipchumba Kurui
P O Box 512
HOMA BAY

PERMISSION TO PRETEST THE QUESTIONAIRES

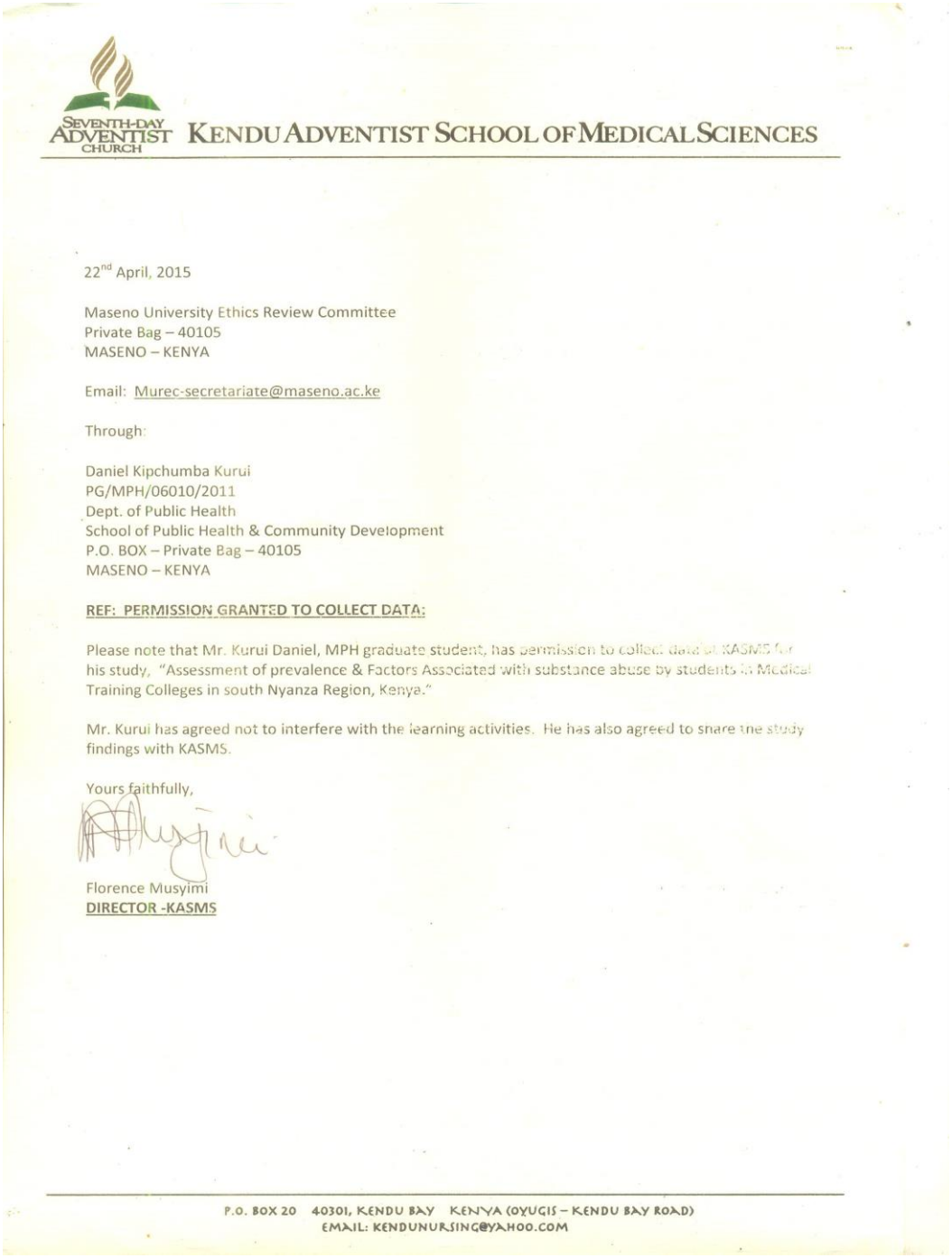
Following your request to pretest your research questionnaire in our campus and KMTC Director's permission to collect data on your research proposal **'Assessment Of Prevalence And Factors Associated With Substance Abuse By Students In Medical Training Colleges In South Nyanza Region, Kenya'.**

I please to inform you that permission is hereby granted to pretest your questionnaire.

Thank you.

Dr. Gordon Kweto
For **PRINCIPAL**

APPENDIX H: AUTHORIZATION LETTER FROM DIRECTOR KENDU ADVENTIST SCHOOL OF MEDICAL SCIENCES



SEVENTH-DAY ADVENTIST CHURCH KENDU ADVENTIST SCHOOL OF MEDICAL SCIENCES

22nd April, 2015

Maseno University Ethics Review Committee
Private Bag – 40105
MASENO – KENYA

Email: Murec-secretariate@maseno.ac.ke

Through:

Daniel Kipchumba Kurui
PG/MPH/06010/2011
Dept. of Public Health
School of Public Health & Community Development
P.O. BOX – Private Bag – 40105
MASENO – KENYA

REF: PERMISSION GRANTED TO COLLECT DATA:

Please note that Mr. Kurui Daniel, MPH graduate student, has permission to collect data at KASMS for his study, "Assessment of prevalence & Factors Associated with substance abuse by students in Medical Training Colleges in south Nyanza Region, Kenya."

Mr. Kurui has agreed not to interfere with the learning activities. He has also agreed to share the study findings with KASMS.

Yours faithfully,

Florence Musyimi
DIRECTOR -KASMS

P.O. BOX 20 40301, KENDU BAY KENYA (OYUGIS – KENDU BAY ROAD)
EMAIL: KENDUNURSING@YAHOO.COM