FACTORS INFLUENCING CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS, IN MOUNT KENYA UNIVERSITY KIAMBU COUNTY, KENYA

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DECLARATION AND APPROVAL

Declaration

This thesis/project is my original work and has never been presented for any academic award in any institution.

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DEDICATION

I dedicate my thesis to my family and a special feeling to my son Magiri for being my source of inspiration and friends who believed in me when I was lost. They have shown me much love and support.

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I want to take this opportunity to thank God for his kindness and affection while I was a student. I express my gratitude to the Mount Kenya University School of Public Health for their endeavors in creating a nurturing atmosphere. I wish to convey my heartfelt appreciation to my supervisors, Dr. Dominic Mogere and Dr. Esther Muitta, for their invaluable guidance, oversight, and perceptive feedback, all of which have greatly influenced my research. I also wish to extend my heartfelt thanks to my classmates for their steadfast support. Blessings to all of you from God.

ABSTRACT

When taken exactly as directed by the manufacturer, cigarette smoking is the only drug that cause death to the majority of its users. Every year, smoking-related deaths claim the lives of over 8 million people. Over 7 million smokers who smoke directly and an additional 1.2 million who are exposed to secondhand smoke as non-smokers comprise the aforementioned population. University students are becoming more and more cigarette smokers. Nonetheless, a sufficient amount of research has been done on the factors influencing university students' decision to smoke cigarettes. The study aimed to identify factors affecting college students' choices to smoke cigarettes using a descriptive cross-sectional survey for the research. Quantitative data was collected through questionnaires that were structured, and qualitative data was obtained through key informant guides. Using stratified random sampling, 395 students from four faculties on the main campus of Mount Kenya University were incorporated in the investigation. Frequencies and proportions were provided by descriptive analysis. Chi-square and logistic regression analysis were employed to evaluate factors linked to cigarette smoking. The study received ethical approval from the MKU Institution of Ethics and Review Committee, execution authorization by NACOSTI, and fieldwork permission by the relevant Kiambu County government departments. A p-value less of 0.05 or less was deemed statistically significant. The study a smoking prevalence of 13.5% among the participants. This is a public health concern as the university policy prohibits substance and drug abuse among university students. In this research, cigarettes was the most (83.3%) smoked tobacco product while Kuber was the least (17.7%) smoked tobacco product. Understanding the risk of smoking, such as lung cancer or oral health issues, decreased the likelihood of cigarette smoking among students. Concerning social economic/demographic factors influencing smoking, having a lower pocket change of less than 1000 Ksh reduced the odds of smoking while being a first-year student, and a male increased smoking odds. Concerning psychosocial factors influencing smoking; alcohol consumption increased the odds of smoking while the odds of smoking reduced with the absence of a family history of smoking. A comprehensive strategy addressing multiple factors that contribute to starting and continuing tobacco use is essential to prevent smoking among students. Tobacco-free lifestyles should be encouraged through community-based, policy-driven, and educational initiatives that foster a supportive environment. Through the implementation of comprehensive interventions, students can make well-informed decisions, fend off peer pressure to smoke, and ultimately lower the cases of smoking among youth.

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LIST OF ABBREVIATIONS

CVDs : Cardiovascular diseases

DSM-5 : Diagnostic and Statistical Manual of Mental Disorders

ETS : Environmental Tobacco Smoke

GATS : Global Adult Tobacco Survey

GDP : Gross Domestic Product

GYTS : Global Youth Tobacco Survey

HBM : Health Belief Model

KDHS : Kenya Demographic Health Survey

LMICS : Low- and Middle-Income Countries

MKU : Mount Kenya University

MOH : Ministry Of Health

NACADA : National Authority for the Campaign Against Drug Abuse

NACOSTI : National Commission for Science Technology and Innovation

NCDS : Non-Communicable Diseases

WHO : World Health Organization

1.0 CHAPTER ONE: INTRODUCTION

This section outlines research background information, statements of the problem, purpose of the research, research objectives, research questions, justification, study significance, study scope, study limitations, study delimitations, study assumptions, and operational definition of terms.

1.1 Background Information

Over 1.2 million non-smokers die annually from exposure to secondhand smoke while over 7 million individuals die directly from smoking cigarettes. Overall, WHO 2022 states that smoking causes more than 8 million deaths annually. It's projected that by 2030; cigarette smoking will have produced the heaviest burden of premature death and disability worldwide as compared to the rest of the health risk factors. Mathers et al., 2006, Kaiping et al 2021.

The only drug that causes death to the majority of its users when used as prescribed by the manufacturer is tobacco. Over 8 million of the world population die annually from smoking cigarettes annually. More than 7 million people who smoke directly and 1.2 million individuals who do not smoke but are subjected to secondhand smoke make up the population described above (CDC, 2016). Eighty % of the world's 1.1 billion smokers are thought to originate from middle-class or lower-class nations. According to Duko et al. (2019), smoking is associated with a higher risk for contracting disease of heart, stroke, oral and cancer of the lungs, as well as decay of the teeth and wrinkles in the skin. The most common use of tobacco among majority of its users is cigarette smoking.

The prevalence of cigarette smoking has been lower in Africa, as compared to other continents however, this trend is changing because tobacco industries are increasingly

targeting African nations with the expansion of tobacco productions and marketing strategies.

In Kenya, tobacco use, continues to present a major public health issue. 2015 Kenya STEP wise survey for risk factors of non-communicable disease estimated that 13% of population between age 15-69 years old used tobacco with the highest percent among men. Despite Kenyans efforts to control tobacco use through strict legislation, there are challenges due to weak enforcements of regulations, cheap tobacco are readily available and advertising of tobacco. Moreover, smoking among university students remains a concern as this age group is easily influenced by peer pressure, stress and risky behavior.

Additional tobacco varieties include.

Cigars: tightly rolled bundle made up of fermented tobacco leaves, Hookah/ Shisha: An instrument with a flexible tube for vaporizing or heating and then smoking tobacco, Smokeless tobacco: They inserted directly in the mouth or placed between the gum and lower lip, electronic cigarettes (E-Cigarette): Battery operated devices that have cartilages filled with nicotine and flavor. Tobacco uses also directly or indirectly causes health complications, and death from non-communicable diseases. Cigarettes use is the most preventable contributory factor for death, disability, and illness worldwide. In 2004 Thomson et al. Cigarette smoke is thought to contain 7,357 different chemical compounds from various classes. It is estimated that 70% of these carcinogenic chemicals, which are present in smoke from cigarettes, cause cancer. (Hitschi H, 2015).

1.1.1 Chemicals Found in a Cigarette Smoke

With every puff, you take poison, toxic metals, and carcinogens as shown below. (World Health Organization, Internal Agency for Research on Cancer IARC 2011)

Carcinogens: Any substance that causes or exacerbates cancer.

Benzene: primarily present in chemical pesticides. present at high concentrations in smoke from cigarettes, making up half of all exposures to humans.

Formaldehyde: It is a preservative for dead bodies in its liquid phase, in its gaseous state it is perceived as an irritant to the nose, eye, and throat that when inhaling cigarette smoke.

Vinyl chloride: A synthetic chemical used in the manufacture of plastics.

Toxic chemicals.

Chemicals that can cause harm to our health if inhaled or absorbed.

Arsenic: used as rat poison. Find its way through pesticides.

Cadmium: lethal heavy metal found in batteries.

Poison: Any substance that has the potential to cause death or physical distress to a living organism upon exposure.

Ammonia: Enhances the effectiveness of nicotine in cigarettes.

Carbon iv oxide

Nicotine

1.2 Statement of the problem

The prevalence of tobacco usage in the WHO Africa region is estimated at 14% (Eriksen et al, 2012). As a result of improved economic growth in Africa, this figure is on an upward trajectory because increased income is likely to enable the purchase of more tobacco products (Bletcher et al., 2013). In Africa, around 1 in every 5 adults smokes cigarettes (WHO 2014).

Despite widespread awareness of its health risks, cigarette smoking continues to be a leading cause of preventable disease and mortality worldwide. Cigarette smoking continues to be socially normalized and accessible among youth, adults, and adolescents in many communities worldwide. The persistence and acceptance of this behavior suggest gaps in public health interventions, education, as well as policy enforcement.

Among University students, smoking cigarettes continues to be a major public health issue, even with growing awareness of its harmful effects and smoking ban in most university settings. The transitional nature of university life, which comes with increased freedom, independence, peer pressure, academic stress and exposure to a new social environment, makes this age group more vulnerable among all other age groups. These factors may contribute to initiating or maintaining cigarette smoking habits.

While numerous policies and anti-smoking campaign including total ban of smoking within the university exist, the continued high rates of smoking among university students indicate that the current strategies may not be entirely effective. Gaining insight to the factors associated with cigarette smoking in this population is important for developing effective interventions. There's a need to investigate specific factors that are linked with cigarette smoking among students in order to inform more targeted and effective prevention measures. These factors are prevalence, psychosocial, social demographic, students' awareness and perceptions. By examining these factors, the study aims to offer evidence-based insight that can inform development of effective

policies, students health initiatives, and cigarette smoking cessations for university students.

1.2.1 Kenya profile

The economy of Kenya is market-based in which most decisions pertaining to investments, production, and logistics are based on supply and demand. According to an economic survey in 2022, Kenya's Gross Domestic Product (GDP) saw a growth of 5.5% in 2018 and 5.9% in 2019. The growth in 2019 is largely attributed to recovery in agriculture which is one of the major economic sectors and it saw a growth of 34.15% in 2019 up from 34.01% in 2018 and 31.07% in 2017. (Euromonitor international 2021).

1.2.2 The burden of tobacco in Kenya

In 2016, Kenya produced 17.4 billion sticks of cigarettes establishing itself as a key producer of both raw and manufactured tobacco products. Tobacco is mainly grown in Migori, Bungoma, Meru, Embu, Kitui, and Machakos. (The economics of Tobacco farming in Kenya 2016).

1.2.3 Tobacco use prevalence among young people.

Kenya ranks among the highest consumers of tobacco related products in sub-Saharan Africa, this is supported by research from the Kenya Global Adult Tobacco Survey (GATS) 2014, 11.6% of adults or 2.5 million people smoke cigarettes. The KDHS 2014 reports that 10% of children between the ages of 13 and 15 (schoolboys, 12.8 and girls, 6.7%), were tobacco users. According to Euromonitor International 2017, those who smoke were estimated to be 3 million people (2.7 million males and 1.3 million females) and this number is projected to continue rising. (Euromonitor 2017).

1.2.4 Tobacco use among youths.

Findings from the 2014 indicate that 24.4% of students aged between 13 to 25 had tried smoking cigarettes with 33.0 of males and 15.5 females reporting use of cigarettes. 18.6% presently consume tobacco (18.2% male, 6.5% female). 19.4% of non-smokers are likely to begin smoking within a year.

1.2.5 Tobacco use among students

Universities are a key representative of the youth population's smoking behaviors. Youths move to universities with the new environment having reduced pressure and control from parents and relatives. This allows students greater independence in making choices which are often influenced by peer pressure. It thus makes university life a risk factor for both initiations as well as an increase in smoking behavior (Mohamed SM 2014). Youth are the main group of people that tobacco companies target. The consumption of tobacco at the early age of 18 leads to lifetime use thus rendering it a great battle to quit (Stephens et al, 2011).

University life is a stage during which young adults are overwhelmed by curiosity and the desire to explore and experiment with different new challenges in life and among them is smoking. A lot of surveys show that cigarette smoking continues to gain popularity among university students as a result of factors that are closely linked to cigarette smoking and tobacco use including; family/friends, socioeconomic status, sex, alcohol use, year of study, and faculty/school smoking behavior (Mowery & et al, 2004).

However, these factors will differ depending on university enrollment (private/public) and cultural differences. Therefore, there was a need to conduct a study at MKU with students to evaluate these factors and update the literature on these factors which influence smoking in Kenya.

Data gathered by the World Health Organization (WHO) show that 18% of African youth (ages 13 to 24) use tobacco-related goods in one way or another (World Health Organization, 2015). According to research done among university students in southwest Nigeria, it revealed that percentage of those who had ever smoked as 22% and 13.7% for those who actively smoke. Comparable research done among Cameroon college students found that 30.1% of them had ever smoked and 6.3% of them currently do. According to an investigation among college students in the Northwest of Ethiopia, the prevalence of smoking is 8.1% currently and the average lifetime smoking rate is 13.1% (Simon-Mortons & Farhat, 2010).

Children in Kenya start smoking as early as eleven years old. These findings align closely with those reported by (Gatheca et al, 2012). The overall incidence of using tobacco in Kenya ranges from 3.0% to 19%, according to a review of earlier research. (2015 WHO STEPS Survey). There is a predicted upward trend for college students. Societal pressure, the need to fit in with friends and family, the desire for students to achieve a high status quo, stress from daily life, and previous instances of smoking are all factors that contribute to this (Fisher et al, 2007).

Most tobacco prevention studies in Kenya concentrate on assessing the prevalence of cigarette smoking among both current versus former smokers. We have access to representative data obtained from government studies, such as the Global Youth Tobacco Survey (GYTS), KDHS MOH Kenya, and NACADA. Out of the four studies mentioned above, the most thorough one carried out in the nation was carried out by GYTS and covers a wide range of topics, including exposure, smoking perception, and tobacco advertising. I was unable to locate a comprehensive analysis of the factors linked to smoking among college students, despite the fact that these investigations examined a wide range of variables and factors. Again, a comparison between studies

done by NACADA, KDHS WHO, and GYTS is not possible because the age groups used in these studies are different. Consequently, there is scarce data on the factors associated with cigarette smoking and its prevalence among university students highlighting the need and purpose for updated data on these factors.

1.3 Purpose of the research

The results obtained from this research contributed to the development of targeted interventions for students, who are a vulnerable group due to their heightened sensitivity to nicotine as well as increased likelihood of initiating smoking and engaging in other risky behavior's during this life stage. Valuable insights into effective antismoking strategies, supporting stronger tobacco control and prevention policies within the academic institutions were provided by the research. Further, it highlighted key factors linked to starting and escalation of tobacco use among university populations. The findings suggest promoting educational initiatives focused on youth, especially university students. The findings suggest an overall improvement in the quality of life for students, teaching and non-teaching staff**.**

1.4 Objectives

1.4.1 Broad Objectives

To investigate factors influencing cigarette smoking among Mount Kenya University students, Kiambu County, Kenya.

1.4.2 Specific Objectives

i. To ascertain the prevalence of cigarette smoking among Mount Kenya University students, Kiambu County, Kenya.
ii. To assess how student's knowledge of risk effects associated with smoking influence cigarette smoking among Mount Kenya University students, Kiambu County, Kenya.

iii. To assess demographic factors that influence cigarette smoking among Mount Kenya University students, Kiambu County, Kenya.

iv. To determine psychosocial factors influencing cigarette smoking among Mount Kenya University students, Kiambu County, Kenya.

1.5 Research questions.

i. What is the prevalence of cigarette smoking among Mount Kenya University students, in Kiambu County, Kenya?

ii. How does student knowledge of risk effects associated with smoking influence cigarette smoking among Mount Kenya University students, Kiambu County, Kenya?

iii. What are the demographic factors that influence cigarette smoking among Mount Kenya University students, in Kiambu County, Kenya?

iv. What are the psychosocial factors influencing cigarette smoking among Mount Kenya University students, in Kiambu County, Kenya?

1.6 Justification

Smoking cigarette is a major contributor to premature death, disease and disability worldwide. This habit is concerning as it often begins during the transitional life stage among the young people, particularly university students.

Illnesses related to smoking such as cardiovascular diseases, respiratory diseases, and various forms of cancer may not appear immediately, but it lays a foundation for these chronic conditions. In addition, cigarette smoking can reduce physical fitness and increase the risk to addiction to other drugs.

Regular smoking is a habit that sets on during early adulthood with studies showing that being an early smoker will likely lead to a lack of success in quitting (Everett et al. 1999). 84% of young smokers aged between 18-24 years have been reported to have made serious efforts to quit for 6 months or longer with only an 8.5% success rate

reported (Messer et al. 2008). In a 2012 nationwide investigation, Rapid Situation Assessment of Drug and Substance Abuse in Kenya, an antidrug agency, found that one in three students admitted to using drugs, with the use of tobacco being the most fraudulently utilized drug. In order to improve tobacco control initiatives in Kenya, including the adoption of the country's Draft Tobacco Control Bill, the WHO and the Ministry of Health Kenya organized a national workshop on the WHO Framework Convention on Tobacco Control (WHO FCTC).

This meeting led to the promulgation of the Tobacco Control Bill in 2003 signed and ratified by the WHO FCTC on 25th June 2004. There was also a Tobacco Control Act was enacted in 2007 which was to create a legislative framework for the regulation of tobacco production, manufacturing, selling, labeling, advertisement, promoting, sponsoring, and the general use of tobacco.

1.7 Study Significance

Smoking cigarettes presents significant health danger, especially leading to health issues such as respiratory illness, disease of the heart, cancer, and various other negative health effects. Assessing smoking behavior among students provided insight into their current and future health risks, highlighting the need for early intervention and health promotion initiatives. Understanding the social demographic, economic, risk effects of smoking, and psychosocial elements that shape students smoking behavior are crucial for designing effective interventions. Elements such as peer influence, parental smoking, marketing of tobacco products, and access to tobacco products play a crucial role in shaping smoking introduction and continuity among young people. In Kenya, research grounded in evidence plays a significant role in shaping and enforcing tobacco control regulations and policies.

The outcome of this study will be beneficial to a range of stakeholders including university students where the study aims to uncover underlying factors influencing cigarette smoking and through identifying these factors the research can inform target awareness campaign. The second beneficial will be university administration where the research findings will provide evidence to guide policy formulation counselling and wellness programs directed to the students.

The third beneficially will be the policy makers and health officials where the information can support the design and implementation of more effective national control policies especially those targeting university populations.

The fourth beneficially will be researchers and academicians where it will increase existing knowledge on youth smoking behaviors and can inform subsequent studies.

1.8 Study Scope

The study's main focus was on university students' smoking status and related variables. 395 students from Mount Kenya University in Kiambu County, Kenya, were the investigation's target population (geographic scope). The study's focus was on university students' smoking status and related variables. 395 students from Mount Kenya University in Kiambu County, Kenya, were the investigation's target population. A descriptive cross-sectional study was carried out among undergraduate students at Mount Kenya University- Thika Campus. For triangulation purposes, the use of mixed methodologies (qualitative and quantitative) was encouraged. Those enrolled for Full-time and undergraduate students in their first, second, third, and fourth years of study at Mount Kenya University -Thika's School of Clinical Medicine, Public health, Pharmacy, Education, Business Economics, and Pure and Applied Sciences (male and female, smokers and nonsmokers) were the target population. The dependent variable

was binary cigarette smoking, which was either the presence of smoking or non-smoking.

The sample population was obtained using stratified random sampling, which represented the complete population. Semi-structured self-administered questionnaires were modified to fit the Kenyan context after being taken from the Global Youth Tobacco Survey (GYTS) in order to gather quantitative data.

The data collection process for this research took one month, and the completion of the research as a whole took approximately one year.

1.9 Study limitations

Social desirability bias affected the self-reported data provided by the students who participated in this research as study respondents. The investigation mitigated these anticipated constraints by utilizing question-recall and probing techniques to guarantee the accuracy of the responses provided.

1.10 The Study Delimitations

The research was limited to three hundred and ninety-five Mount Kenya University students, and it was limited to a few schools only on the MKU main campus. The study also relied on a questionnaire to collect data, which participants may be biased when responding like under reporting of smoking habits.

1.11 The Study Assumptions

The research made assumption that all participants would cooperate and provide completely honest answers to all questions. Additionally, the study made the assumption that participants would understand the questions and be able to respond to them appropriately. The inquiry was predicated on the idea that its conclusions would offer a representative sample of Kiambu County's student smoking population. The study made the assumption that participants would be reachable throughout the study.

1.12 Definition of terms used as operational

Addiction refers to a compulsive dependence on tobacco products, primarily cigarettes, characterized by the inability to control or cease smoking despite negative consequences to one's health, social life, or finances

Cigarette refers to a small, paper-thin cylinder filled with tobacco that is rolled for smoking. The cigarette emits smoke when it is lit, which gets breathed into the lungs and contains chemicals including nicotine.

Cessation Refers to the action of quitting smoking cigarettes or discontinuing using tobacco products. It involves abstaining from smoking cigarettes, cigars, pipes, or any other form of tobacco consumption

Dependence refers to physiological and psychosomatic reliance on nicotine, the addictive substance found in tobacco products, particularly cigarettes. Nicotine dependence is the aspect of tobacco addiction and plays a significant role in sustaining smoking behavior despite adverse health consequences.

Nicotine is used to describe a chemical compound that occurs naturally and is mostly present in the tobacco plants' leaves. It is the active psychoactive ingredient that gives tobacco-based goods like nicotine-free tobacco, cigars, and cigarettes their addictive qualities.

Smoking describes the process of breathing in and out of smoke created when ignited tobacco or other materials.

Stress Refers to psychological and physiological responses to situations or events that are perceived as challenging, demanding, or threatening occur naturally. It can manifest cognitive, behavior, emotional, cognitive, and physical reactions to various stressors.

Substance Abuse refers to a pattern of hazardous or damaging use of psychoactive substances that cause substantial impairment or distress, such as alcoholic beverages, prescription medications, and illegal substances.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This review covers a wide range of issues which are associated with cigarette smoking, the theory used for the study, the theoretical and conceptual framework, prevalence, and tobacco control within different setups.

2.3 Prevalence of smoking among youth in Kenya

One of the biggest demographics that usually makes up the majority of university students is young adults, aged between 18 and 25. In Kenya, youth between the ages of 18 and 25 make up the majority of those who attend universities. There has been a large growth of the tertiary education sector in Kenya in recent years. Where there were just five public universities in 2005, today there are 22 and 17 private ones and 14 public and private constituent colleges. Thus, it has caused more students to enroll in these institutions. In 2014, there were 443,783 students admitted to universities across Kenya which was more than twice 2012 students. Roughly 215,000 of those students joined private institutions (World Education News and Reviews). Among these students, those aged between 15-25 years account for 39% and tobacco usage is a public health concern within this age group.

According to the majority of studies conducted in Kenya, they have been conducted among young people of age 12 to 32 years old as literature has revealed the majority of smoking cases are introduced in their youth, they illustrate a lifetime prevalence of tobacco consumption with more than a quarter as per the table 2.1 below

***Table 2.1*:Life time prevalence of ever tobacco use in Kenya**

Author, year	Region	Design	Population	Life time prevalence of lifetime ever tobacco use	Size of the sample
Ogwell et al.2003	Nairobi	**Smoking**	12-17	31%	1,130
Kwamanga et al. 2003	Nairobi	**Cigarette**	Mean 16.7	32%	5,311
MOH-GYTS, 2007	National	**Cigarette use**	13-15	21.2%	6,768
Otieno etal.2009	Kisumu	**Tobacco products**	14-23	18.3%	458
Atwoli et al.	Eldoret	**Cigarette**	18-32	42.8%	500

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4119461/table/T0001/

As seen in Table 2.2 below, the current tobacco consumption prevalence ranges from 3.8% to 19%, with rural areas having a lower frequency than metropolitan areas.

Table 1.2: Prevalence of present-day tobacco usage among respondents

Author, Year	Region	Design	Population	Current smoking prevalence	Size of the sample
Kwamanga et al. 2003	Nairobi	Cigarette use	Students mean 16.7	10.5%	5,311
MOH, GYTS 2007	National	Cigarette use	Students 13-15	8.2%	6,768
KDHS, 2008	National	Tobacco product	15-49	19%	18,503
Komu et al. 2009	Nairobi	Cigarette use	Students	12.1%	281
Ndetei et al. 2010	Rural	Tobacco product	Adolescents	3.8%	800
NACADA 2012	National	Tobacco product	15-65	9.1%	2,580

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4119461/table/T0002/

As per the World Health Organization research, 18% of African young people (aged 13 to 24) use at least one tobacco product. (World Health Organization, 2015). A study involving university students in the southwestern part of Nigeria depicted a prevalence of 22.0% for those who ever smoked and 13.7% for those currently smoking. A comparable investigation conducted in Cameroon discovered a 6.3% incidence of currently using cigarettes and a 30.1% percentage of people ever smoking. In Ethiopia, 8.1% of people currently smoked and 13.1% of people had smoked at some point in their lives. (Mortons & Simon-farhat, 2010).

22.3% of worldwide population consumed tobacco in 2020 of which 36.7% was men and 7.8% women WHO 2023.

In Kenya, some young people start smoking at the age of 11. Results from (Gatheca et al, 2012), which reviewed tobacco use from previous investigations in Kenya and showed a range between 3.0% and 19% in prevalence, support these conclusions. University students have an expectedly rising propensity to smoke, which can be linked to a history of smoking in the past, peer pressure, acceptance from students' aspirations to have high traits, and life issues like stress. Fisher and others (2007). Commencing university is a time in which many adults move from family to campus life which is more independent, and this transition period may expose them for the first time to peer pressure and start new social experiences such as smoking Omar et al 2020.

Although there has been research on smoking on campus, there is little data to explain the cause of the increasing trends in tobacco prevalence among university students. Updating data on the aforementioned variables is necessary because there is a death of information in Kenya about the factors associated to the use of cigarettes and the incidence of smoking among university students.

2.2 Tobacco Control in Kenya

In an effort to improve tobacco control initiatives in Kenya, which involves the adoption of the country's Draft Tobacco Control Bill, the WHO and the Ministry of Health in Kenya organized a national workshop on the WHO Framework Convention on Tobacco Control (WHO FCTC).

Following this meeting, Kenya promulgated the Tobacco Control Bill in 2003 and, on June 25, 2004, signed and ratified the WHO FCTC.

2.2.1 Tobacco Control Act (TCA)

So as to regulate manufacturing, production, labeling, sale, marketing, public relations, sponsorship, as well as the use of tobacco products, and exposure to the smoke from

tobacco products, the 2007 Tobacco Control Act established legislative standards. These standards include:

Shield people from illness and death brought by tobacco use, keep consumers of tobacco products away from disingenuous encouragements to use tobacco, to shield children by not making tobacco available to them, to edify the people on the dangers of using tobacco, to shield nonsmokers from second-hand smoke, to guard tobacco cultivators, employees, and retailers by providing substitute economic activities, to protect the government by helping stop illegal trade, to shield cigarette smokers by providing for cessation.

2.2.1.2. Tobacco control in workplaces

Workplaces, both indoors and outdoors, have implemented measures to reduce cigarette smoking. (Chapman and Freeman 2006). This is because of the concerns about the health and well-being of employees, the fire hazard threats posed, extra cleaning expenses, maintenance and to avoid being sued by workers and individuals who have become ill due to being exposed to ETS at the workplace (Chapman and freeman 2006; Sorensen 200).

Individuals who work at smoke-free workplaces are better poised to change their smoking habits because the largest periods of compulsory smoking abstention occur at work. (Osinubi et al. 2004). Smokers can be influenced by the pressure from non-smokers to stop smoking (Sorensen 2001). It has been demonstrated that tobacco use bans and restrictions on the workplace can both help to lower exposure to ETS and cigarette use. (Brownson and others, 1997 Chapman and Associates, 1999.

2.2.1.3 Tobacco Control within Universities.

There are now extensive measures in place to discourage youth tobacco use. On the other hand, initiatives aimed at deterring and preventing tobacco consumption among

college students have received scant attention. Section 33(2) of the Kenyan legislation provides a comprehensive list of areas where cigarette smoking is allowed. The list includes “education facilities” though there is a lack of clarity on that term. It is construed to include vocational training facilities and universities.

The law is in conflict with the FCTC act and guidelines and does not provide 100% smoke-free workplaces and public areas, including vocational training and university facilities, resulting in a lack of adequate or universal shield from being exposed to tobacco smoke.

To agree with the FCTC act and its regulations, the law should make it a requirement that all parts of public areas and work areas are 100% smoke free. To preserve the well-being as well as the health of the campus community, policies that regulate the consumption of tobacco have been implemented in colleges and universities. The majority of university tobacco control measures forbid smoking on school property, in residence halls, and on tobacco-related items.

2.2.1.4 University Students

University is a critical transitional stage during which young adults are eager to explore and experiment with different new challenges in life and among them is smoking. Numerous studies indicate that variables that have a direct or indirect connection to smoking and tobacco use, such as family and friends, economic status, sexuality, alcohol consumption, year of investigation, and faculty and school smoking behavior, are to blame for the increasing use of cigarettes among university students (Mowery et al, 2004). The prevention of teenage smoking and adult nicotine cessation have been extensively studied. Consequently, young adults' tobacco prevention and cessation have gotten minimal attention. (Backinger & Associates, 2003).

Due to the multiple age groups utilized in the national drug survey, smoking trends among young people aged 18 to 25, particularly those in university education, are limited in Australia. Data reveals that adults aged 20-29 are more prone than any other age group to smoke. (AIHW2003). Extensive research on tobacco consumption done on college students in the United States shows a growing tendency. (Rigoti, Lee and Wechsler 2000). Even though research indicates that most college students begin using cigarettes before they turn 18, some of them claim to have begun to smoke after enrolling in school (Reed et al., 2007). Research conducted by Borders et al. (2005) and Reed et al. (2007), college students in America smoke more frequently than adults in general.

Young adults have more versatility in their smoking practices than older smokers, and they are more likely to start smoking and increase their tobacco consumption. (Hammond et al. (2005). Of all age groups, Canadians aged between of 19 and 24 have the highest smoking rate, at about 31%. (Mamela M. and others, 2002). Initially seen as experimental or sporadic, tobacco use eventually becomes ingrained. (Glantz and Ling, 2012). Students' lives, especially those of adolescents, are a critical time when smokers can change from being a periodic to regular user to becoming dependent on their habit, and nonsmokers can be exposed to smoking. (Backinger & Associates (2013).

A person's physical and/or psychological dependence on drugs is called addiction. Tobacco dependence is categorized as a component of additional drug use disorders in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSMM-5).

Craving, withdrawal, and poor control over the decision to continue using a drug even after being made knowledgeable about the risks to one's health are diagnostic signs for these disorders. A variety of psychological, biological, cultural, and social variables are

linked to smoking. However, these factors differ depending on the various smoking theories.

2.4 Knowledge of risk effects associated with smoking.

Awareness of the health risks linked with cigarette smoking significantly shapes attitudes and behaviors, especially among young university students. Numerous studies have shown that although most students know about the health risks of smoking, such as lung cancer, cardiovascular disease, and respiratory issues, this awareness does not always lead to change in behavior. Research by WHO 2022 indicates that awareness of long-term consequences is often outweighed by peer influence and perceived short term influence. Another research conducted by Arrazola et al. 2017 among university students revealed that over 80% acknowledged the harmful effects of tobacco use, a significant proportion underestimated the risk of addiction and secondhand smoke exposure.

2.4.1 Lung cancer as a side effect of smoking

Cancer of the lungs is primarily caused by cigarette smoking, which continues to be the major contributory factor of deadly cancers in the world. The relationship between lung cancer and cigarette smoking remains a serious concern despite extensive education efforts and public health efforts (Madkhali et al., 2023). There is no denying the strong and conclusive correlation linked to smoking and lung cancer, as shown by numerous epidemiological studies. According to O'Keeffe et al. (2018), smokers have a notably higher risk of getting cancer of the lungs in comparison to non-smokers, with the likelihood of developing it rising in direct proportion to the length and intensity of smoking. Furthermore, studies have demonstrated that non-smokers' risk of developing cancer of the lungs can also be raised by exposure to secondhand tobacco smoke.

Smoking induces chronic inflammation and oxidative stress in the lungs, creating a favorable microenvironment for the initiation and progression of cancer. Inflammatory

mediators and reactive oxygen species generated in response to tobacco smoke can cause DNA damage, impair DNA repair mechanisms, and promote tumor growth and metastasis. Smoking induces chronic inflammation and oxidative stress in the lungs, creating a favorable microenvironment for the initiation and progression of cancer(Crane et al., 2016a). Inflammatory mediators and reactive oxygen species generated in response to tobacco smoke can cause DNA damage, impair DNA repair mechanisms, and promote tumor growth and metastasis. The most effective method for minimizing the risk of lung cancer and improving health overall is avoiding cigarette smoking. Research has demonstrated that within years of stopping smoking, there is a significant likelihood of reducing the risk of cancer of the lungs, highlighting the significance of smoking cessation programs as a top priority for the public. It is imperative to acknowledge that the cumulative harm resulting from smoking may endure beyond cessation, underscoring the necessity of ongoing supervision and assistance for ex-smokers.

2.4.2 cardiovascular disease as a side effect of smoking

Cardiovascular disease continues to be the top cause of death worldwide, surpassing all other health-related conditions. Cigarette smoking continues to be one of the leading avoidable contributory factors for CVD, even though there are many others. Several epidemiological investigations have conclusively shown that smoking and coronary artery disease are strongly correlated (Gallucci et al., 2020). Compared to non-smokers, smoking increases the risk of contracting several cardiovascular diseases, such as peripheral artery disease, aortic aneurysm, coronary artery disease, and stroke. Moreover, the duration and intensity of cigarette smoking significantly increase the risk of CVD, highlighting the dependency of the dose relationship between cigarette use and heart health. (Banks et al., 2019).

Smoking exerts multifaceted effects on the cardiovascular system, playing a key role in initiating, and advancing atherosclerosis, a hallmark feature of CVD. The toxic ingredients of cigarette smoke, which include carbon monoxide and nicotine, promote inflammation, endothelial dysfunction, oxidative stress, and dyslipidemia, all of which contribute to the formation of atherosclerotic plaques within the arterial walls (Parmar et al., 2023). These plagues have the potential to impede blood flow, which can result in ischemic events like strokes and heart attacks. Smoking hurts the makeup and function of the circulatory system, making it an important prevention option for cardiovascular disease. It is critical to comprehend the mechanisms that underline the association between smoking and CVD in order to promote smoking cessation interventions and put into practice efficient preventive measures (Banks et al., 2019). Lowering the burden of coronary artery disease and enhancing population health requires comprehensive tobacco control policies in conjunction with health promotion campaigns that draw attention to the cardiovascular risks associated with smoking.

2.4.3 respiratory disease as a side effect of smoking

Smoking has a terrible impact on breathing problems health and is still the greatest preventable cause of death globally. The term "chronic respiratory diseases" (CRDs) refers to a group of crippling illnesses that are closely associated with smoking, such as lung cancer, emphysema, chronic bronchitis, and chronic obstructive pulmonary disease (COPD). COPD stands for obstructive pulmonary disease, or chronic obstruction. According to Gan et al. (2022a), the main risk factor for developing COPD is cigarette smoking, an indestructible and progressive disease that causes respiratory symptoms and airflow restriction. Prolonged tobacco smoke exposure leads to oxidative stress and chronic inflammation in the airways, which damages lung tissue and narrows airways, impairing lung function. Additionally, the toxic constituents of tobacco smoke disrupt

mucociliary clearance mechanisms, predisposing individuals to recurrent respiratory infections and exacerbations of COPD(Trofor et al., 2018).

Apart from its immediate impact on individuals who smoke, secondhand smoke exposure presents a noteworthy risk to the respiratory well-being of non-smokers. A study done by Jayes et al. (2016), breathing in ambient tobacco smoke raises the risk of breathing-related symptoms, asthma flare-ups, and fewer infections of the respiratory tract in both adults and children. Policies promoting smoke-free environments are essential for mitigating the adverse respiratory effects of secondhand smoke exposure. Research conducted by Jayes et al. (2016), smoking still continue to be a significant global contributor to the burden of breathing-related illnesses, causing a variety of disabling ailments and preventable deaths. It is essential to comprehend the complex relationship between smoking and respiratory health in order to promote efforts to quit smoking and put into practice efficient measures for tobacco control. Comprehensive strategies aimed at reducing tobacco use, protecting non-smokers from secondhand smoke, and improving access to respiratory care are essential for stemming the tide of respiratory disease morbidity and mortality.

2.4.4 Oral health problems as a side effect of smoking

Smoking cigarettes is a well-known contributory factor for a wide range of oral health issues, from minor aesthetic issues to serious and potentially fatal conditions. The effect of cigarette smoking on oral health outcomes endures despite advances in oral healthcare and extensive awareness campaigns. According to Komar et al. (2018), smoking poses a serious risk for developing periodontal disease, a collection of inflammatory disorders that damage the soft tissues and the supporting structures which hold teeth. Tobacco smoke compromises the body's immune response, impairs gingival blood flow, and disrupts collagen metabolism, creating an environment conducive to bacterial growth and periodontal tissue destruction. Smokers are more prone to

developing gingivitis (gum inflammation) and periodontitis (gum disease), characterized by gum recession, pocket formation, tooth mobility, and eventual tooth loss(Agrawal et al., 2021).

Smoking has been associated with an elevated risk of dental caries (tooth decay) and dental erosion, primarily due to alterations in saliva composition and flow rate. Tobacco smoke reduces saliva production, diminishes saliva's buffering capacity, and alters the microbial balance in the oral cavity, promoting the proliferation of cariogenic bacteria and demineralization of tooth enamel(Agrawal et al., 2021). Consequently, smokers are more susceptible to cavities, particularly in hard-to-reach areas and along the gumline. Smoking takes a heavy toll on oral health, predisposing individuals to a plethora of adverse conditions ranging from mild discomfort to life-threatening diseases. Understanding the negative effects of cigarette smoking on oral tissues is crucial for promoting tobacco cessation efforts and improving oral health outcomes(Gajendra et al., 2023). The intricate relationship between cigarette smoking and oral health issues requires comprehensive approaches that incorporate access to dental care, education about oral health, and counseling for quitting smoking.

2.4.5 Reproductive health problems as a side effect of smoking

Smoking not only poses significant risks to respiratory and cardiovascular health but also exerts detrimental effects on reproductive health. From fertility problems to pregnancy complications, tobacco use can disrupt normal reproductive function and diminish the chances of conception and successful childbirth. Smoking has been associated with increased infertility in both men and women. In women, smoking can disrupt ovarian function, impair oocyte quality, and disrupt menstrual cycles, leading to ovulatory dysfunction and subfertility(Tweed et al., 2017). Furthermore, oxidative stress and DNA damage resulting from smoking can impair oocyte sustainability and raise the possibility of a premature pregnancy loss. Tobacco use has been connected to lower

sperm quality in men, including lower sperm count, motility, and morphology. These changes can affect fertility and lower the chance of a successful conception. Compared to smoke-free couples, smoking couples may have delays in becoming pregnant (Dechanet et al., 2011). Smoking can prolong the time to conception by impairing sperm function, disrupting hormonal balance, and interfering with the implantation of embryos in the uterine lining. Additionally, smoking-related reproductive health issues, such as erectile dysfunction and menstrual irregularities, can further hinder the process of conception and contribute to infertility(Dechanet et al., 2011).

Men who regularly smoke are known to be at an increased risk of having erectile dysfunction (ED). The pathophysiology of ED is aided by the toxic chemicals found in tobacco smoke, which can impair vascular function, inhibit the production of nitric oxide, and promote endothelial dysfunction (Asare-Anane et al., 2016). Smoking-related cardiovascular diseases, including atherosclerosis and peripheral vascular disease, can further exacerbate erectile dysfunction and compromise sexual function(Asare-Anane et al., 2016). Smoking affects both sexual function in both women and men, infertility, and the success of pregnancies. It also poses serious risks to reproductive health. Encouragement of cessation of tobacco use efforts and enhancing reproductive outcomes require awareness of the harmful effects of cigarette smoking on health issues related to reproductive wellness. Comprehensive strategies that integrate smoking cessation counseling, education on reproductive health, and access to related healthcare services are essential for addressing the complex interplay between smoking and reproductive health issues.

2.5 Social economic/demographic factors influencing cigarette smoking behavior among adolescents.

Numerous studies have focused on the social-economic aspects that influence teenagers' decision to start and stick with smoking cigarettes. This is a result of earlier research showing how smoking by parents and peers is a greater risk indicator, as it establishes a person's social class. Availability and money to buy a cigarette are also socioeconomic factors that can have an impact on smoking cigarettes among university students. Studies conducted on the impacts of smoking parents and how they influence their children have shown a significant rise in the risk of adolescent smoking. For example, Bauman KE, Foshee VA, Linzer MA et al. (1990) noted a greater link between the two. Parents' attitudes towards smoking cigarettes and especially towards their children have shown a significant relationship to adolescent smoking, for example, Newman IM, WardnJM, 1998. Indifference from parents towards their children increased the likelihood of smoking in adolescents in America. Numerous studies have focused on the social-economic aspects that influence teenagers' decisions to start and stick with smoking cigarettes. This is the consequence of earlier research showing how smoking by parents and peers is a crucial risk indicator as it establishes one's social class. Factors associated with a family environment that have been studied include supervision of the parent, attachment, support, style of parenting also amount the duration parents spend with their children, not aware of friends to their children, and a lack of enough monitoring are associated with increased smoking. A positive and authoritative style of parenting has been shown to lower the level of adolescent cigarette smoking. Additionally, research indicates that best friends have a stronger influence on cigarette smoking than other peers.

2.5.1 Access to Resources

Financial resources have a big impact on smoking behavior; they affect how common smoking is as well as how easy it is for people to stop. The inexpensiveness of tobacco products, like smokeless tobacco, cigars, and cigarettes, is directly impacted by their cost. Individuals with lower financial resources may find it more challenging to afford tobacco products, especially as tobacco prices increase due to taxation or other factors(Garrett et al., 2015). However, despite financial constraints, some individuals may continue to prioritize spending on cigarettes due to nicotine addiction or social factors. In their study, easy access to financial resources was associated with smoking. Smoking prevalence tends to be higher among individuals with lower socioeconomic status(Perelman et al., 2017). A portion of this discrepancy can be linked to socioeconomic variables like income, work status, and educational attainment. People who are less fortunate financially might smoke more frequently as a stress reliever or as a means of connecting in their own neighborhoods.

2.5.2 Education level

According to Ruokolainen et al. (2021), there is a consistent correlation between smoking habits and education level. Smoking prevalence is typically lower and smoking cessation rates are higher among individuals with higher levels of education. Studies consistently demonstrate that those with less education have a higher chance of cigarette smoking as compared to the people who have a greater educational level (Tomioka et al., 2020). There is a direct correlation between cigarette smoking and education level, according to data from population-based studies and national surveys. According to Magati et al. (2018), smoking related cases in Kenya declined as education levels increased. Compared to people with a higher education level, while the ones with lower levels have an increased likelihood of starting smoking when they are younger. Peer pressure, stress, and lower socioeconomic status are socioeconomic factors linked to

lower educational attainment that may increase the risk of commencing smoking in those with less education (Magati et al., 2018).

2.5.3 Employment status.

Many environmental, psychological, and socioeconomic factors all have an impact on the complicated connection between smoking habits and job status. Although work status alone may not be a determinant of smoking behavior, research indicates that employment status is significantly correlated with the prevalence of smoking, quitting, and smoking patterns (Jung et al., 2013). Hungary's research revealed that smoking prevalence differs depending on one's job status. According to Linsalu et al. (2011), smoking prevalence is generally higher among the unemployed or those who are not in the labor force (such as retirees, homemakers, and students) than it is among the employed. Factors such as stress, financial strain, social isolation, and boredom during periods of unemployment or underemployment may contribute to higher smoking rates among these groups(Griswold et al., 2018).

2.5.4 Marketing and Advertisement

According to Dutra et al. (2019), they found a strong relationship between cigarette smoking and advertising and marketing activities, which has contributed to the high rate of cigarette smoking in society. Empirical studies have demonstrated that being exposed to cigarette advertisements and materials used for promotion can impact attitudes, beliefs, and smoking-related behaviors. According to Lovato et al. (2011), it may motivate smokers to keep up or boost their tobacco use, encourage people who are not smokers to start smoking, and make it more difficult for smokers to give up. Tobacco companies have strategically targeted specific demographics, including young adults, women, and marginalized communities, with tailored advertising messages. They have used various tactics to appeal to these groups, such as associating smoking with independence, social status, attractiveness, and stress relief. In their study, the presence

of tobacco marketing and advertisement was observed to increase the odds of smoking among study respondents(Nam et al., 2023).

2.6 The psychosocial factors associated with smoking.

2.6.1 Stress

Stress can increase psychological cravings for cigarettes, even in the absence of physiological nicotine dependence According to Diaz-Martinez et al. (2022), smoking may be viewed as a coping mechanism to reclaim control or comfort throughout stressful situations. This can result in conditioned reactions that strengthen the link between consuming and relief from stress. Social networks and peer relationships can amplify the association between stress and smoking behavior. Stressed individuals may have a higher likelihood to smoke if they are surrounded by peers or family members who smoke or if smoking is perceived as a socially acceptable way to cope with stress within their social circle(Diaz-Martinez et al., 2022). In their study, Stress was observed to increase psychological cravings for cigarettes, even in the absence of physiological nicotine dependence(Barroso-Hurtado et al., 2023). Smoking may be perceived as a coping strategy to regain a sense of control or comfort during stressful experiences, leading to conditioned responses that reinforce the association between smoking and stress relief.

2.6.2 Alcohol Use

Alcohol consumption can increase the desire to smoke cigarettes. This phenomenon is partly attributed to the interaction between alcohol and nicotine in the brain, which can heighten the rewarding effects of both substances. Individuals who drink alcohol may experience stronger cravings for cigarettes and find it more difficult to resist smoking(Hongli et al., 2021). Research has indicated that drinking alcohol may lead to a daily spike in smoking cigarettes (Hongli et al., 2021). This might be because drinking affects cognitive functions like self-control and making choices, which makes people

smoke more than they otherwise would when sober. Alcohol consumption is frequently seen in social settings where smoking is also common. The beginning and continued use of smoking are significantly influenced by peers. Individuals who drink alcohol in social settings where smoking is common may feel more pressure to smoke or may perceive smoking as a normative behavior(H. Lin et al., 2020).

2.6.3 Physical Activity Engagement

Physical activity can serve as a helpful aid for individuals attempting to quit smoking. Exercise can distract from smoking cravings, alleviate withdrawal symptoms, and reduce stress and anxiety, which are common triggers for smoking relapse(Zhang et al., 2023). Moreover, the sense of accomplishment and improved mood associated with regular physical activity can enhance self-motivation to maintain smoking abstinence. Kim et al. (2023) found that people who frequently participated in physical activity, especially during adolescence, had a lower likelihood of starting to smoke. Sports, leisure pursuits, and fitness regimens can take up time that could have been spent in situations that encourage smoking initiation, like parties where smoking is common (Zhang et al., 2023).

2.6.4 Family History

According to studies, an individual's vulnerability to dependence on nicotine and habitual smoking is largely determined by genetic factors. Genetic predispositions that affect nicotine metabolism, brain reward pathways, and sensitivity to the harmful effects of nicotine make it more likely for individuals who have a history of smoking within their family to start smoking themselves (Tully et al., 2019a). In accordance with Wickbom et al. (2017), secondhand exposure to smoke increases among those who have family members who smoke in their place of residence. Childhood and adolescent exposure to ETS raises the likelihood of starting to smoke and increases the risk of experiencing nicotine dependence along with associated health issues in the future.

2.7 Research Gap Identification

Participants in the Kenya Global Youth Tobacco survey totaled 6,768 students between the ages of 13 and 15. Fifteen percent of students currently use tobacco in any way, eight percent smoke cigarettes, and ten percent use tobacco in another way. An analysis by the World Health Organization (WHO) shows that Kenyans smoke almost 8 billion cigarette sticks a year (Hamann et al., 2014). According to estimates, there are 50 million people living in Kenya, which means that the country's yearly cigarette smoking rate may have risen to 10 billion sticks. The percentage of youth smokers in Kiambu County has been steadily rising since the 2001 Global Youth Tobacco Survey. Usually beginning around age 12, the habit persists into adulthood (KDHS, 2022). Despite the notable cases of smoking in Kiambu County, no research has been done on the incidence of smoking and related aspects among students in Kiambu County. Therefore, this study's objective was to provide a current picture of the situation in Kiambu County. While the national and international surveys like GYTS and KDHS have provided valuable insights into tobacco use by youth in Kenya, there remains a lack of local data specific to individuals within the universities. Existing statistics highlight a concerning national trend with 15 % of Kenyan youth aged 1-15 years using tobacco some beginning as early as 12 years. Despite these alarming figures, no comprehensive research has been conducted to determine the prevalence patterns or factors leading to tobacco use, especially in students in Kiambu county, a region which is experiencing a steady rise in youth smoking rates since 2011 according to GYTS. This absence of up-to-date research data creates a knowledge gap that makes it difficult to address the targeted public health interventions; therefore, this study aims to address this gap by examining the present situation regarding cigarette smoking and related factors among students in Kiambu County.

2.8 Theoretical framework

This research was based on the theories below.

2.8.1 Social Cognitive Theory.

According to this theory, a person's habits are directly influenced by what they see in other people in the setting of relationships, experiences, and media exposure. Cognitive behavior therapy, which takes into account how people's thoughts, feelings, and behaviors can interact and influence one another to perpetuate harmful habits, is based on the social learning theory(M. Lin et al., 2023). The Social cognitive theory approach to smoking aims to dismantle the situational and emotional connections that contribute to the establishment of smoking behavior.

Cognitive techniques focus on the thoughts and feelings that may also influence a person's smoking behavior. This school of thought is an expansion of social learning that includes the consequences of cognitive process; example judgment, perceptions, and motivation on an individual's behavior and on the environment that affects them through intrinsic or extrinsic responses to a person's behavior that affect the probability of continuing or stopping that behavior.

Social Cognitive Theory (SCT) offers a framework for understanding how individuals develop and sustain behaviors through the interplay of personal factors, environmental, and behavioral factors. When it comes to smoking behavior, SCT offers insights into why individuals start smoking, continue smoking, and how they can quit. An illustration of how SCT relates to smoking behavior is provided below.

Observational Learning: SCT indicates that people learn behaviors by watching others, particularly in the context of smoking, individuals may be influenced by observing peers, family members, or celebrities who smoke. If they see smoking

portrayed positively or if they witness others being rewarded for smoking (such as through social approval or acceptance), they may be more likely to initiate smoking themselves.

Modeling: Individuals are more prone to copy actions that they believe to be rewarded or validated. People are more likely to start smoking if they see other people getting compliments or admiration for their habit. On the other hand, they might be less inclined to smoke if they see the detrimental effects of smoking, like health issues or social rejection.

Outcome Expectations: SCT states that people think through the possible consequences of a behavior before acting on it. When it comes to smoking, people might compare what they think are the benefits (like stress reduction and social acceptance) to the perceived disadvantages (like health risks and financial outlay). They might be more inclined to smoke if they think the advantages outweigh the disadvantages.

Self-Efficacy: The confidence one has in oneself to perform a specific behavior is known as self-efficacy. People who have a strong sense of self-worth may be more confident in their ability to resist pressure from others to start or stop smoking, if they decide to do so. Conversely, those with low self-efficacy might feel helpless to resist cues to smoke or overcome their nicotine addiction.

Social Environment: SCT emphasizes the importance of social influences on behavior. Factors such as pressure from peers, norms from social, as well as media portrayals of smoking can all influence an individual's decision to smoke or quit smoking. Social support from family, friends, or groups that support also is a contributing factor in helping individuals resist smoking or maintain abstinence.

By understanding the principles of Social Cognitive Theory, interventions can be developed to address smoking behavior at multiple levels, including individual attitudes and beliefs, social influences, and environmental factors. These interventions may include education about the health risks of smoking, promoting smoke-free environments, providing support for smoking cessation, and fostering positive social norms that discourage smoking.

2.8.2 Health Belief Model

The Health Belief Model (HBM), a psychosocial framework, examines individuals' attitude and beliefs to understand and predict health behaviors (Balbach et al., 2006). The Health Belief Model can be used to analyze smoking behavior in order to determine why individuals begin smoking, why they stick with it, and what variables affect their decision to stop (Balbach et al., 2006). This is how cigarette smoking is related to the Health Belief Model.

Perceived Susceptibility: HBM states that people who believe they are more prone to a certain health issue are more inclined to participate in activities that promote health. People who believe they run the risk of smoking-related health problems, like heart disease or cancer of the lungs, may be more inclined to give up smoking or abstain from it completely.

Perceived Severity: The perceived severity of a health problem also influences health behavior. If individuals believe that smoking-related illnesses are severe and have significant consequences on their health and well-being, they may be more inclined to take action to quit smoking or avoid smoking in the first place.

Perceived Benefits: Per the health belief model, individuals are more likely to adopt health promoting behaviors if they believe the benefits outweigh the cost. When it comes to smoking, people may compare the benefits they see from continuing, like

stress reduction or acceptance from society to the benefits they see from stopping, like better health and cost savings.

Perceived Barriers: Perceived barriers refer to the obstacles or challenges that individuals perceive in adopting or maintaining healthy behavior. For smokers, perceived barriers to quitting may include nicotine addiction, withdrawal symptoms, social pressure, or fear of weight gain. These barriers can influence their motivation and ability to quit smoking.

Cues to Action: The HBM states that when people are given cues or triggers to act, they are more likely to participate in behaviors that promote health. Healthcare professionals' recommendations, encounters with smoking-related health emergencies, or emotional backing from friends and family can all serve as cues to take action and stop smoking.

Self-Efficacy: Self-efficacy, or the conviction that one can stop smoking, was not initially included in the Health Belief Model but is frequently included in the framework. Increased self-efficacy is linked to better success in stopping smoking and staying abstinent.

By applying the principles of the Health Belief Model, interventions can be developed to address smoking behavior by increasing perceived susceptibility and severity of smoking-related health issues, emphasizing the benefit of quitting, tackling perceived obstacles to cessation, offering prompts for action, and boosting confidence in quitting smoking. These interventions may include educational campaigns, smoking cessation programs, and policy initiatives aimed at reducing tobacco use.

2.9 Conceptual framework

This research conceptual framework was developed to investigate the factors affecting cigarette smoking among MKU students. The outcome being studied, which is the independent variable was individuals smoking status or behavior. This variable was measured by whether a student was smoking, and if so, how often. The relationship between the smoking prevalence which is independent variable and individuals smoking status which was dependent variable was explored to understand how smoking within society influences individuals' smoking behavior.

In this study, the independent variables like prevalence of smoking, knowledge on effect of smoking, demographic factors, and psychosocial factors interact in shape the dependent variable which is students smoking behavior. This conceptual framework highlights how individual, social, and factors related to environmental contribute to cigarette smoking giving a in depth view of the issue at a local level.

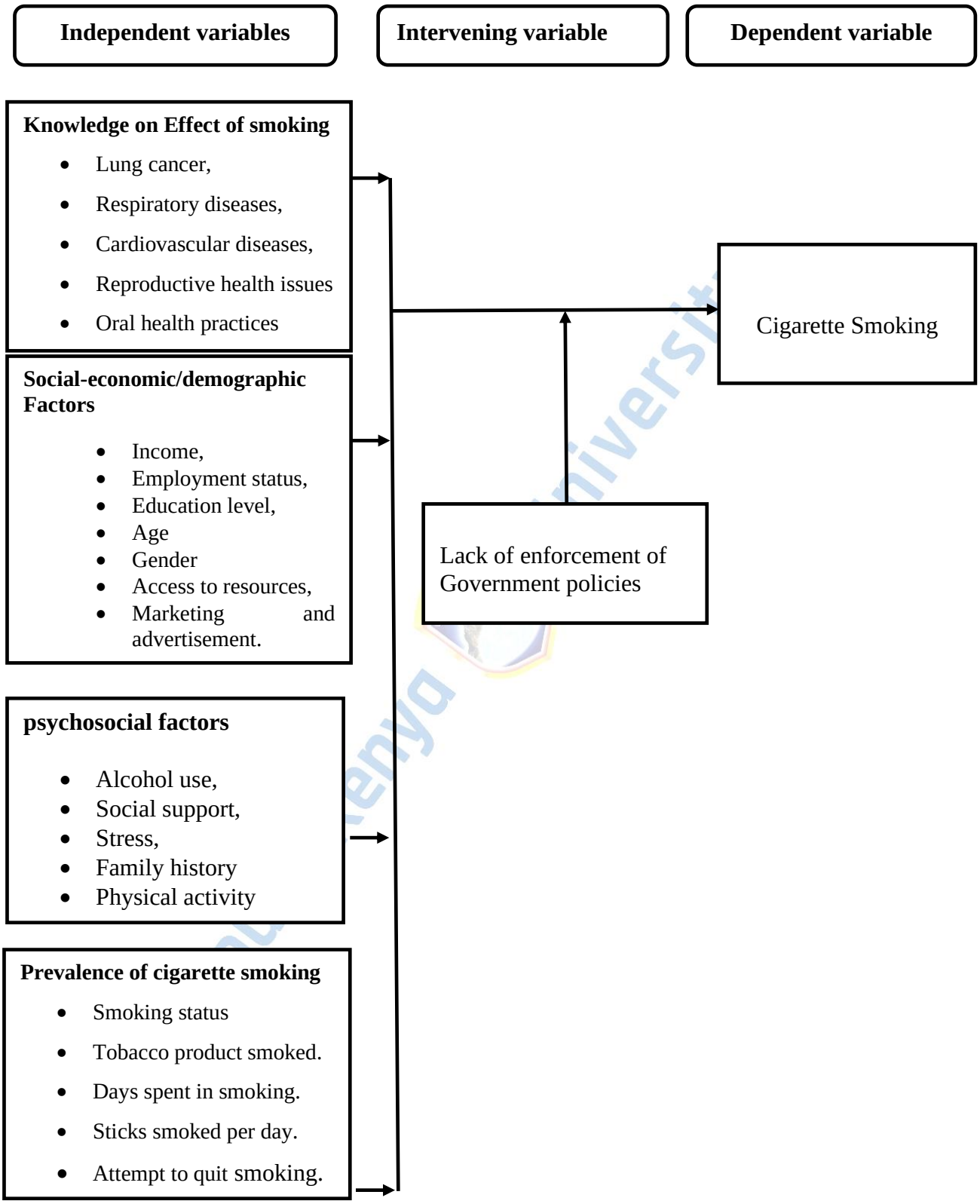

Figure 2.1: A conceptual framework adapted from the literature search**.**

CHAPTER THREE

3.0 METHODS AND MATERIALS

3.1 Introduction

This chapter presents the research methodology employed to explore the factors influencing cigarette smoking among students at MKU. It details the research design, the target population, sampling strategies, data collection methods, procedures for assessing reliability and validity, techniques for data analysis, and ethical considerations.

3.2 Study design

A descriptive cross-sectional study was carried out among undergraduate students at Mount Kenya University- Thika Campus. For triangulation purposes, the use of mixed methodologies (qualitative and quantitative) was encouraged.

3.3 Study site

The Thika Institute of Technology, the university's forerunner, was founded in 1996 as a Computer Outreach Program, which gave rise to the concept for the university's founding. At this juncture in Kenyan history, the advancement of Computer Technology and Mobile Telephony, together known as Information and Communication Technology (ICT), the institution began gaining momentum in both urban and rural regions. In 2000, it was branded as a commercial college introducing programs in computer studies and leadership training. Later that year, the Ministry of education Science and Technology officially registered and recognized it as a legitimate higher learning institution.

To address evolving societal training needs, the college launched apprenticeships programs in paramedical training, informational technology, busine and entrepreneurship in 2002. In 2006, it sought a partnership with JKUAT to offer diploma

and degree programs, a request that was approved by the commission for higher education (CHE). The institution continued to work closely with CHE to establish a privately funded university adhering to all available procedures.

. Thika Institute of Technology served as the forerunner or precursor to MKU's establishment of a fully-fledged privately funded university, following the completion of all prerequisites outlined in the 1989 rules for establishing a privately funded university by the Commission for Higher Education.

Mount Kenya University is located in Thika town, approximately 47 kilometers by road from Nairobi city. Its environs constitute small business holdings, pharmaceutical companies, and Bidco Africa. Several learning institutions are also within their immediate surroundings e.g. Thika High School whereas distant higher education institutions such as Thika Medical College, Gretsa University, etc.

3.5 Target population

The target population for this study consisted of two distinct groups:

1. University students

The primary target population was all undergraduate students in the MKU School of Nursing, Public Health, Clinical Medicine, Medical School, Pharmacy, School of Education, School of Computing and Informatics, School of Social Sciences, School of Business and Economics, School of Pure and Applied Sciences, School of Law, School of Engineering, Energy, School of Hospitality, School of Travel and Tourism Management, and School of Built Environment are among its fourteen schools. Full-time undergraduate students in their first, second, third, and fourth years of study at Mount Kenya University -Thika's School of Clinical Medicine, Public health, Pharmacy, Education, Business Economics, and Pure and Applied Sciences (male and

female, smokers and nonsmokers) were the target population. Three-quarters of the schools were obtained, and these schools were chosen at random.

2. Key informants
3. In addition to the students' participants, a purposive sample of four key informants was selected to provide in depth insight. They included. University clinician, school chaplain, university psychologist, student leader.

3.6 Study Variables

3.6.1 The Dependent Variable

Cigarette smoking was the dependent variable

3.6.2 The Independent Variables

1. In socio-economic/demographic factors, the following parameters were captured, income, age, employment status, education level, access to resources, marketing, and advertisement.
2. In the knowledge of risk associated with smoking the following parameters were captured, knowledge of lung cancer, awareness of respiratory diseases, awareness of pregnancy complications, knowledge of cardiovascular diseases, awareness of reproductive health issues, and knowledge of oral health practices.
3. In the psychosocial factors, the following parameters were captured, alcohol use, social support, stress, family history, and physical activity engagement.

3.7 Criteria for Inclusion and Exclusion

3.7.1 Criteria for Inclusion

1. The study included all eligible students from Mount Kenya University.
2. All students who consented were included in the study.

3.7.2 Criteria for Exclusion

1. All students who didn't agree to sign a written informed consent form were excluded from the study.
2. All critically ill students were also excluded from this study because it was determined that they were not suitable for it.

3.8 Sample size determination

Since the population exceeded 10,000 individuals, Slovin's formula was applied to calculate an appropriate sample size that would accurately reflect the characteristics of the broader population during the study. Below is a calculated example:

$$n = N/(1 + Ne^2)$$

Where:

n= number of samples

N = total population

^{e} = margin error (0.05)

i.e. 28500\ (1+28500 (0.05) ^{2})

n=395 students

3.9 Sampling Technique Used

The sample population was obtained using stratified random sampling, which represented the complete population. The use of stratified Random sampling is best since there is no bias in the sampling process and it is more accurate and precise since it is a better representation of the overall population. The population was divided into homogenous subpopulations (strata) based on shared characteristics like gender, age, course taken, etc. Every member of the population being studied was in exactly one stratum. The final sample was selected randomly from these groups. A stratum of six based on the course a respondent partakes (clinical medicine, public health, pharmacy, education business economics, and Pure and applied science) and be in the first to fourth year of study, were formulated. Structuring the research around a defined stratum helped eliminate bias and ensured fair representation across the population. A proportionate stratified sampling technique was employed to select respondents from each stratum based on the determined sample size.

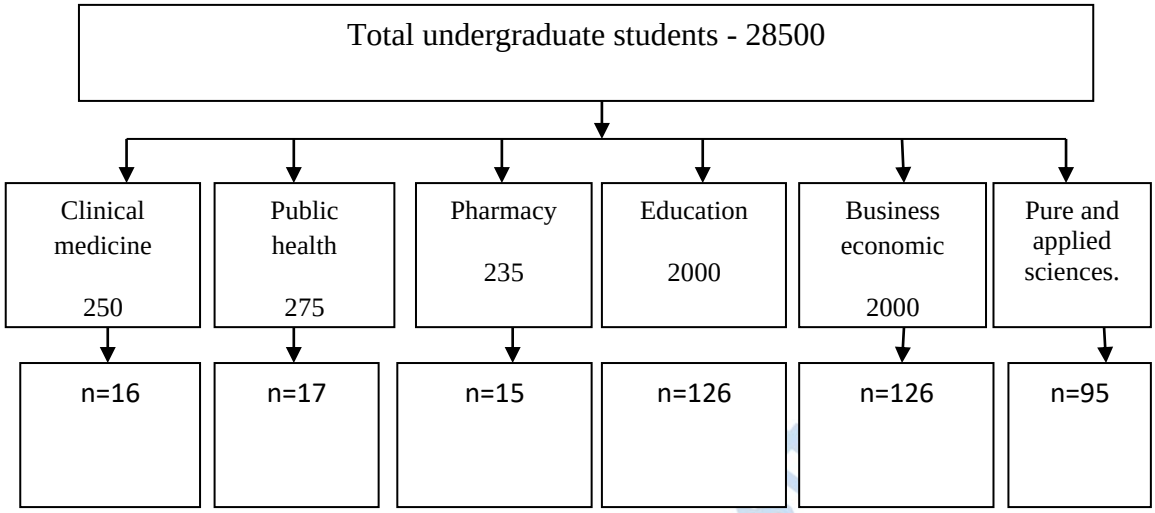

Figure 2:Sample size determination among different sampled schools.

3.10 Data Collection Tools and Procedures

A Structured self-administered questionnaires were modified to fit the Kenyan context after being taken from the Global Youth Tobacco Survey (GYTS) in order to gather quantitative data. Data were gathered using a questionnaire structured into 5 sections; section A focused on cigarette smoking initiation, section B examined smoking habits, section C assessed awareness of the health risk associated with smoking, section D explored socio-economic factors, and Section E with psychosocial factors related to smoking. Key informant interviews schedule was used to collect qualitative data.

3.11 Testing for Validity and Reliability

To ensure reliability and validity of the questionnaire, a pilot study was conducted followed by analysis using Cronbach alpha (α>0.70). A 0.05% confidence level was upheld to ascertain the instruments' validity and dependability. To test for validity, a psychologist was enquired to have a review of the question. To test for reliability 10% of the sample size was used by students from Gretsa University. Lastly, Cronbach alpha was employed to execute for reliability. The study yielded a reliability score of 89%, demonstrating that the chosen data collection instrument was dependable.

3.12 Data Analysis

Data was entered and evaluated using SPSS (Version 26). For categorical data, descriptive statistics was executed to provide frequencies and proportions, in bivariate analysis, chi-square was executed to find an association between the independent and dependent variables. Variables found to be significant in the bivariate analysis were further examined using logistic regression. A P-value of than 0.05 was used to determine statistical significance. For qualitative data, thematic analysis was applied. The data analysis plan is outlined in Table 3 below

Table 3: Data analysis plan

Specific Objective	Plan for data analysis
To ascertain the prevalence of smoking	Descriptive statistics (frequencies and percentages)
To assess university student's knowledge of the risk effects associated with smoking	Descriptive statistics Chi-square test Binary logistic regression
To assess social economic/demographic factors that influence smoking	Descriptive statistics Chi-square test Binary logistic regression
To determine psychosocial factors influencing smoking	Descriptive statistics Chi-square test Binary logistic regression

3.13 Ethical Considerations.

The study was given ethical approval by the Mount Kenya University Institution of Ethics and Review Committee, and execution authorization by NACOSTI. Authorization was also requested from the appropriate Mount Kenya University offices before commencing the study. To protect the privacy of the participant data, a unique number was assigned to the questionnaire instead of the respondent's name. The respondents gave their full consent to participate in this investigation, and before any data is collected, the investigator will get it. At any point during the investigation, the participants could choose to end it. The information was secured with a password to avoid unwanted access. The study's conclusions were given to the university for the benefit of all parties involved.

CHAPTER FOUR:

4.0 RESULTS AND DISCUSSION

4.1 Introduction

Response rate for research, the cigarette smoking prevalence, assessment of smoking behavior among students, psychosocial factors, socioeconomic factors, and the level of knowledge of risk effects associated with smoking among Mount Kenya University students, Kiambu County, Kenya are covered in this section.

4.2 Research Response Rate

The number of administered questionnaires to eligible study participants was 395, with a response rate of (90.1%) meaning 356 of the questionnaires filled during the study were deemed suitable for data analysis.

4.3 Prevalence of smoking among students

The current study's Table 4 shows the study participants' smoking prevalence. 13.5% of the participants in this study reported being current smokers. Given that use of drugs and other substances by students is forbidden by university policy, this raises public health concerns. The results of the present investigation closely matched those of a study conducted in Saudi Arabia, where 17.6% of students reported being current smokers (Al-Kaabba et al., 2011). However, another investigation from China found a lower prevalence of smoking at 2.3%, while an investigation from Ethiopia found a higher prevalence of smoking at 21.1% (Roble et al., 2021).

The difference in the prevalence of smoking could be linked to different sampling procedures and study area settings in this study, cigarette was the most (83.3%) smoked tobacco product which could be linked to their easy accessibility while Kuber was the least (17.7%) smoked tobacco product. Concerning days spent smoking per week, close to half (41.7%) of the study reported utilizing 1-3 days of smoking while only a few (20.8%) of the study respondents reported smoking more than six days of smoking.

Finally, with regard to the quantity of sticks smoked daily, most (87.5%) research participants reported smoking one to five sticks, with only (12.5%) a small percentage smoking more than five sticks daily, a finding that may be related to the high price of these sticks. Regarding attempts to stop smoking, more than a quarter (41.7%) of study participants stated that they had a desire to stop smoking, while more than half (58.3%) said they had no desire to stop smoking cigarettes.

Table 2: Prevalence of cigarette smoking and smoking behavior.

Independent variables	Categories	Frequency	Valid percentage
Smoking status	yes	48	13.5
	no	308	86.5
Tobacco products smoked	Cigarette	40	83.3
	Kuber	8	16.7
Days spent smoking in a week	1-3	20	41.7
	4-6	18	37.5
	>6	10	20.8
Sticks smoked per day	1-5	42	87.5
	6-10	6	12.5
Attempts to quit smoking	yes	20	41.7
	no	28	58.3

4.4 Descriptive Statistics on Knowledge of Risk Effects Associated with Cigarette Smoking

Table 5 below provides descriptive statistics on knowledge of risk effects associated with smoking, concerning knowledge of lung cancer as a risk effect of smoking, more than half (67.1%) of the study respondents were knowledgeable of lung cancer as a risk effect of smoking which could be linked to the labeling of lung cancer as a repercussion of smoking among tobacco products. Regarding knowledge of CVDs as a risk effect of smoking, over a quarter (39.6%) of the study participants lacked knowledge, which could be attributed to poor forums for educating and promotion of the side effects of smoking. Concerning knowledge of reproductive health issues as a risk effect of smoking, almost a quarter (30.9%) of the study respondents were knowledgeable, meaning despite smoking being a public health concern awareness of its side effects is not well known among the smoking and non-smoking population. Regarding knowledge of oral health problems as a risk effect of smoking, close to half (43.5%) of the study respondents were knowledgeable about oral health concerns that arise as a result of smoking. One of the biggest risk factors for gum disease is smoking. Smokers are more prone to infections because of the inflammation of the gums, immune system impairment, and decreased blood flow to the gums caused by it. In severe cases, gum disease can result in bone damage, tooth loss, and gum recession.

Lastly, concerning knowledge of respiratory diseases as a risk effect of smoking, more than half (68.8%) of the study respondents were knowledgeable. Chest infections, influenza, and pneumonia are among the respiratory infections that smokers are more prone to. Cigarette smokers are more susceptible to diseases and their consequences because smoking impairs the immune system and the airway tract's defense against

pathogens. Close to a quarter (22.5%) of the study respondents were not knowledgeable on knowledge of respiratory diseases as a risk effect of smoking.

Table 5: Descriptive Statistics on Knowledge of Risk Effects Associated with Cigarette Smoking

Independent Variables	Categories	Frequency	Valid Percentage%
Knowledge of lung cancer as a risk effect of smoking	Agree (Knowledgeable)	239	67.1
	Neutral	16	4.5
	Disagree (Not Knowledgeable)	101	28.4
Knowledge of CVDs as a risk effect of smoking	Agree (Knowledgeable)	141	39.6
	Neutral	75	21.1
	Disagree (Not Knowledgeable)	140	39.3
Knowledge of reproductive health issues as a risk effect of smoking	Agree (Knowledgeable)	110	30.9
	Neutral	67	18.8
	Disagree (Not Knowledgeable)	179	50.3
Knowledge of oral health problems as a risk effect of smoking	Agree (Knowledgeable)	155	43.5
	Neutral	74	20.8
	Disagree (Not Knowledgeable)	127	35.7
Knowledge of respiratory diseases as a risk effect of smoking	Agree (Knowledgeable)	245	68.8
	Neutral	31	8.7
	Disagree (Not Knowledgeable)	80	22.5

4.5 Cross-tabulations on Knowledge of Risk Effects of Smoking and Cigarette Smoking

Table 3:Cross-tabulations on Knowledge of Risk Effects Associated with Cigarette Smoking

Independent Variables	Categories	Dependent Variable (Smoking)		Statistical Significance
		YES(N=48)	NO(N=308)	(Chi-square Test)
questionnaire on knowledge of lung cancer as a risk effect of smoking (Likert scale aggregate)	Agree (Knowledgeable)	23(9.6%)	216(90.4%)	$\chi2$=12.918 df=2 p*=0.002
	Neutral	1(6.2%)	15(93.8%)	
	Disagree (Not Knowledgeable)	24(23.8%)	77(76.2%)	
questionnaire on knowledge of CVDs as a risk effect of smoking (Likert scale aggregate)	Agree (Knowledgeable)	20(14.2%)	121(85.8%)	$\chi2$=0.973 df=2 p=0.615
	Neutral	12(16%)	63(84%)	
	Disagree (Not Knowledgeable)	16(11.4%)	124(88.6%)	
questionnaire on knowledge of reproductive health issues as a risk effect of smoking (Likert scale aggregate)	Agree (Knowledgeable)	14(12.7%)	96(87.3%)	$\chi2$=0.09 df=2 p=0.956
	Neutral	9(13.4%)	58(86.6%)	
	Disagree (Not Knowledgeable)	25(14%)	154(86%)	
questionnaire on knowledge of oral health problems as a risk effect of smoking (Likert scale aggregate)	Agree (Knowledgeable)	15(9.7%)	140(90.3%)	$\chi2$=8.27 df=2 p=0.016
	Neutral	7(9.5%)	67(90.5%)	
	Disagree (Not Knowledgeable)	26(20.5%)	101(79.5%)	
questionnaire on knowledge of respiratory diseases as a risk effect of smoking (Likert scale aggregate)	Agree (Knowledgeable)	27(11%)	218(89%)	$\chi2$=7.235 df=2 p=0.027
	Neutral	3(9.7%)	28(90.3%)	
	Disagree (Not Knowledgeable)	18(22.5%)	62(77.5%)	

Table 4: Binary logistic regression table with Significant Variables on Knowledge of Risk Effects Associated with Cigarette Smoking

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step	lung cancer			14.508	2	.001			
1[a]	K	1.250	.338	13.651	1	.000	3.489	1.798	6.771
	N	1.657	1.080	2.353	1	.125	5.245	.631	43.598
	KN						Ref		
	oral health			9.905	2	.007			
	K	1.033	.369	7.849	1	.005	2.809	1.364	5.784
	N	1.058	.469	5.087	1	.14	2.880	1.149	7.221
	KN						Ref		
	respiratory diseases			8.486	2	.064			
	K	.972	.355	7.515	1	.076	2.644	1.319	5.300
	N	1.287	.693	3.452	1	.063	3.623	.932	14.091
	KN						Ref		
	Constant	**-.248**	**.411**	**.365**	**1**	**.545**	**.780**		

Binary logistic regression and the chi-square test of independence were used to determine the relationship between smoking cigarettes and awareness of the risks associated with smoking. As indicated in Tables 6 and 7 above, regarding knowledge of lung cancer as a risk effect of smoking, only a few (9.6%) of the study respondents who were smokers were knowledgeable about lung cancer as a risk effect of smoking. Many smokers may deny or rationalize the risks associated with smoking. They might believe that they won't be personally affected by smoking-related diseases or that the health consequences won't occur much later in life. A statistically significant correlation between cigarette smoking and knowledge of lung cancer as a smoking risk effect was revealed by the chi-square test of independence ($\chi 2=12.918, df=2, p^*=0.002$).

Further analysis with logistic regression (table 7) revealed a significant difference between knowledge of lung cancer as a risk effect of smoking and cigarette smoking (P=0.001). In addition, those who were knowledgeable of lung cancer as a risk effect of

smoking were 3.5 times less likely to engage in smoking. People can choose their health-related behaviors with greater knowledge when they are aware of the link between smoking and lung cancer. With this knowledge, people might be more inclined to stop smoking if they have previously been a smoker or less likely to start.

These results were similar to those of a study done in Australia which found an association between knowledge of lung cancer as a risk effect of smoking and smoking(Crane et al., 2016b). This was in contrast to a Rwandan study, though, which discovered no correlation between the two variables (Murorunkwere & Nizeyimana, 2021).

As indicated in Tables 6 and 7 above, concerning knowledge of CVDs as a risk effect of smoking. Only a few (14.2%) of the study respondents who were smokers were knowledgeable about CVDs as a risk effect of smoking. Unlike respiratory symptoms such as coughing or shortness of breath, the early stages of cardiovascular disease often present with subtle or silent symptoms. Smokers may not experience obvious signs of heart disease until the condition has progressed to a more advanced stage, leading to a lack of awareness of the connection between smoking and CVDs. During bivariate analysis, there was no statistically significant correlation found between the knowledge of CVDs as a risk effect of smoking and the act of smoking cigarettes ($\chi 2=0.973, df=2, p=0.615$).

According to one of the key informants' narratives, these results were at odds with the qualitative findings.

"*Smokers may believe that they have control over their cardiovascular health through lifestyle factors such as diet and exercise and may not fully appreciate the role that smoking plays in increasing the risk of heart disease and stroke….*" (KII, university clinician).

These findings similar to two other studies done in the USA and Italy which reported similar findings where knowledge about CVDs as a risk effect was found not to influence smoking(Rigotti & McDermott, 2019; Tedesco et al., 2015).

As indicated in Tables 6 and 7 above, concerning knowledge of reproductive health issues as a risk effect of smoking, the majority (87.3%) of the study respondents who were non-smokers were knowledgeable of reproductive health issues as a risk effect of smoking. Understanding the reproductive health risks of smoking makes the health consequences more personally relevant to individuals, especially those of reproductive age or planning to have children. This awareness can motivate them to quit or avoid smoking to protect their fertility. During bivariate analysis, there was no statistically significant correlation found between the knowledge of reproductive health issues as a risk effect of smoking and smoking cigarettes ($\chi 2=0.09, df=2, p=0.956$).

A study conducted in low- and middle-income countries (LMICs) found that found no correlation between the two variables and these results agreed with (Shukla et al., 2021). However, this was contrary to research done in Nigeria where being aware of reproductive health issues linked with smoking reduced the odds of smoking (Ogbuabor et al., 2023).

As indicated in Tables 6 and 7 above, concerning knowledge of oral health problems as a risk effect of smoking, only a few (9.7%) of the study participants who were smokers were aware of oral health problems linked with smoking. Unlike some other health problems associated with smoking, such as coughing or shortness of breath, the early signs of oral health issues may not be as immediately visible or noticeable. Smokers may not connect their oral health problems, such as gum disease or tooth discoloration, with their smoking habits. A statistically significant correlation between cigarette

smoking and knowledge of oral health issues as a risk factor for smoking was revealed by the chi-square test of independence ($\chi 2=8.27, df=2, p=0.016$).

Further analysis with logistic regression (table 7) revealed a significant association between knowledge of oral health problems as a risk effect of smoking and cigarette smoking (P=0.007). In addition, those who were knowledgeable of oral health problems as a risk effect of smoking were 2.8 times less likely to smoke. Smoking increases the risk of oral health issues such as gum disease, tooth loss, and oral cancer because it is known to be a contributing factor in these conditions. Smokers may be motivated to quit or avoid smoking to preserve their oral health and maintain a healthy smile**.** These results were in harmony with research done in Croatia and Indonesia which found a statistical association between knowledge of oral health problems as a risk effect of smoking and smoking(Islami et al., 2023; Komar et al., 2018).

As indicated in Tables 6 and 7 above, concerning knowledge of respiratory diseases as a risk effect of smoking, close to a quarter (22.5%) of the study respondents who were smokers were not knowledgeable of respiratory diseases as a risk effect of smoking. Addiction to nicotine can impair judgment and make it hard for smokers to prioritize or recognize the health risks associated with smoking. Smokers may think they can stop smoking before suffering major negative health effects, or they may be unaware of the harm smoking does to their respiratory system. A statistically significant correlation between knowing that respiratory diseases are a risk factor for smoking and smoking cigarettes was revealed by the chi-square test of independence ($\chi 2=7.235, df=2, p=0.027$).

However, Further analysis with logistic regression (table 7) revealed no association between being knowledgeable of respiratory diseases as a risk effect of smoking and

cigarette smoking (P=0.06), translating that being knowledgeable of respiratory diseases as a risk effect of smoking was not an independent factor for smoking.

These findings were found to be similar with a study done in China which found no association between the two variables(Zhao & Zhao, 2023). However, this was contrary to research done in China where being aware of respiratory diseases linked with smoking reduced the odds of smoking(Gan et al., 2022b).

4.6 Descriptive Statistics on Social-Economic/Demographic Factors

Table 8: Descriptive Statistics on Social-Economic/Demographic Factors

Independent variables	Categories	Frequencies	Valid percentage
Employment status	yes	95	26.7
	no	261	73.3
Pocket change	<1000	109	30.6
	1001-1500	171	48
	1501-2000	76	21.4
age	16-20	137	38.5
	21-25	200	56.2
	26-30	19	5.3
gender	male	190	53.4
	female	166	46.6
Marketing	present	30	8.4
	absent	326	91.6
Year of Study	first	133	37.4
	second	138	38.8
	third	57	16
	fourth	28	7.9

Table 8 above provides descriptive statistics on socioeconomic/demographic factors influencing smoking among the study respondents. Concerning employment status, close to three quarters (73.3%) of the study respondents were not employed which could be linked to their schooling status coupled with insufficient skills to get an employment opportunity, while close to a quarter (26.7%) of the study respondents were employed. In regard to pocket change, close to half (48%) of the study respondents reported having 1501-1500 Ksh pocket change per week which could be linked to financial support by parents and the presence of Helb loans. Only a few (21.4%) of the study respondents had a pocket change of between 1501-2000 per week. Regarding the study participants' ages, the majority of young people typically enroll in their first-degree program at this age, and over half of the study participants (56.2%) were between the ages of 21 and 25. This may be related to the fact that this is the ideal age for undergraduate study. Only a few of the study respondents in this research were aged between 26-30 years. Concerning the gender of the study participants, more than half (53.4%) of the study respondents were male while close to half (46.6%) of the study respondents were females. Regarding the year of study among the study participants, more than a quarter (37.4%) of the study respondents were first year while only a few (7.9%) of the study partakers were fourth year. Lastly concerning the marketing of tobacco products, merely 8.4% of the participants in the study acknowledged that tobacco products are primarily marketed through sponsorships of athletic events, public entertainment, and point-of-sale displays. The majority of study participants (91.6%) stated that there was no marketing of tobacco products, which may have been caused by Kenya's strict laws forbidding exposure to and advertising of tobacco products.

4.7 Cross-tabulation between socioeconomic/demographic factors and cigarette smoking

Table 9: Cross-tabulation between socioeconomic/demographic factors and cigarette smoking

Independent variables	Categories	Dependent Variable (Smoking)		Statistical Significance (Chi-square Test)
		YES(N=48)	NO(N=308)	
Employment status	yes	21(22.1%)	74(77.9%)	$\chi2$=8.258 df=1 p=0.004
	no	27(10.3%)	234(89.7%)	
Pocket change	<1000	6(5.5%)	103(94.5%)	$\chi2$=28.564 df=2 p=<0.000
	1001-1500	18(10.5%)	153(89.5%)	
	1501-2000	24(31.6%)	52(68.4%)	
age	16-20	16(11.7%)	121(88.3%)	$\chi2$=3.065 df=2 p=0.22
	21-25	27(13.5%)	173(86.5%)	
	26-30	5(26.3%)	14(73.7%)	
gender	male	34(17.9%)	156(82.1%)	$\chi2$=6.798 df=1 p=0.009
	female	14(8.4%)	152(91.6%)	
Marketing	present	5(16.7%)	25(83.3%)	$\chi2$=0.285 df=1 p=0.594
	absent	43(13.2%)	283(86.8%)	
Year of Study	first	32(24.1%)	101(75.9%)	$\chi2$=22.373 df=3 p*=<0.000
	second	13(9.4%)	125(90.6%)	
	third	3(5.3%)	54(94.7%)	
	fourth	0(0%)	28(100%)	

Table 10:Binary logistic regression table with significant variables on socioeconomic/ demographic factors

								95% C.Ifor EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	year of study			13.305	3	.004			
	first	-1.284	.461	7.762	1	.005	3.6	.112	.683
	second	-1.241	.473	6.877	1	.09	.289	.114	.731
	third	-.703	.483	2.118	1	.146	.495	.192	1.276
	fourth						ref		
	pocket change			20.584	2	.003			
	<1000	1.924	.513	14.087	1	.000	6.847	2.507	18.698
	1001-1500	1.468	.387	14.358	1	.070	4.341	2.032	4.278
	1501-2000						ref		
	what is your gender	-.847	.366	5.356	1	.021	2.332	1.138	4.775
	female						ref		
	are you employed	.884	.360	6.034	1	.21	2.420	0.196	0.249
	no						ref		
	Constant	17.355	717.09	.000	1	.998	346.098		

The chi-square test of independence and binary logistic regression were used to determine the relationship between socioeconomic/demographic characteristics and cigarette smoking. As indicated in Tables 9 and 10 above, Concerning the employment status of the study respondents, more than three-quarters (77.9%) of the study respondents who were non-smokers were employed. Many workplaces have policies regarding smoking, including designated smoking areas, restrictions on smoking indoors, or even complete bans on smoking within the premises. These policies are often implemented to promote a healthy work environment and reduce the risks associated with secondhand smoke. The study participants' employment status and smoking were found to be statistically significantly correlated, according to the chi-square test of independence ($\chi 2=8.258, df=1, p=0.004$). However, Further analysis with logistic regression (table 10) revealed no association between the employment status of

the study respondents and cigarette smoking (P=0.21), translating that the employment status of the study respondents was not an independent factor for smoking.

According to one of the key informants' narratives, these results were at odds with the qualitative findings.

"*I would say that students often work in environments where smoking behavior is prevalent among their peers or colleagues. This peer influence can contribute to the initiation of smoking or the continuation of smoking habits among students who are employed. In addition, Employment often involves social interactions with coworkers, customers, or clients. In some workplaces, smoking may be seen as a social activity or a way to bond with colleagues. Students who work in such environments may be more inclined to start or continue smoking as a means of socializing….*" (KII, school chaplain)

The research findings matched those of a Chinese study (Liu et al., 2015) in which smoking status was not related to employment status. This was in contrast to another South Korean study (Jung et al., 2013) that found that employment increased study participants' odds of smoking by 3.

As indicated in Tables 9 and 10 above, Concerning the amount of pocket change of the study respondents, close to a quarter (31.6%) of the study respondents who were smokers spent a pocket change of 1501-2000 Ksh per week. The price of tobacco products, such as cigarettes, can influence people's smoking behaviors. For certain individuals, particularly those with restricted financial means, the cost of cigarettes could be a crucial factor. Cigarettes can be afforded with even small amounts of pocket change, especially if they are bought separately or in smaller quantities. The study participants' pocket change and cigarette smoking were found to be statistically

significantly correlated, according to the chi-square test of independence ($\chi 2=28.564, df=2, p=<0.000$).

Further analysis with logistic regression (table 10) revealed a statistical association between the amount of pocket change and cigarette smoking (P=0.003), translating that pocket change was an independent factor for smoking behavior. In addition, having a lower pocket change of less than 1000 Ksh reduced the odds of smoking by 6.8. When individuals have limited pocket change, they may find it more difficult to afford cigarettes. This financial barrier can discourage smoking, especially among those who are budget-conscious or financially constrained. If the cost of cigarettes exceeds the amount of pocket change available, individuals may opt to spend their money on other necessities or save it for future use rather than purchasing tobacco products.

The same results were also reported in the study done in Georgia where a lower pocket change reduced the odds of smoking behavior(Garrett et al., 2019), while another study carried out in low middle income nations revealed that the presence of low income increased the odds of smoking behavior(Hosseinpoor et al., 2011).

Regarding the age distribution of the study participants, Tables 9 and 10 above show that 88.3% of the participants who were between the ages of 16 and 20 did not smoke. This could be linked to access accurate information about the dangers of smoking and the addictive nature of nicotine which can empower young people to make informed decisions about their health. Comprehensive tobacco prevention programs in schools and communities can provide youths with the knowledge and skills to resist tobacco use. A non-significant correlation between the age of study participants and cigarette smoking was found by the chi-square test of independence ($\chi 2=3.065, df=2, p=0.22$). Findings from this study were concurrent with those of a study carried out in Iran where age was not associated with smoking behavior(Hamzeh et al., 2020). However, another

study carried out in Gambia revealed that young age among youths was associated with smoking where young youth were at increased odds of smoking by 3.3 which was linked to peer pressure among this age group(Jallow et al., 2017).

As indicated in Tables 9 and 10 above, Concerning the gender of the study respondents, only a few (17.9%) of the study respondents who were smokers were males. Male peer groups may play a significant role in encouraging smoking initiation. Males can be influenced to start smoking by peer pressure, the desire to blend in with their male friends, or social circles where smoking is common. A statistically significant correlation between the gender of study participants and cigarette smoking was revealed by the chi-square test of independence ($\chi 2=6.798, df=1, p=0.009$).

Further analysis with logistic regression (table 10) revealed a statistical association between gender and cigarette smoking (P=0.02), translating that gender was an independent factor for smoking behavior. In addition, being a male increased the odds of smoking behavior by 2.3. Historically, smoking has been more socially acceptable among males than females. Cultural norms and gender stereotypes may contribute to the perception that smoking is a masculine behavior, leading more males to take up smoking.

The results were in line with those of a study conducted in Mexico, which found that men were 4.3 times more likely than women to smoke (Santano-Mogena et al., 2023). However, this is at odds with the results of a study conducted in the USA, which found that smoking behavior was not related to gender (Waldron, 2021).

As indicated in Tables 9 and 10 above, Concerning the market of tobacco products, the majority (86.8%) of the study respondents who were non-smokers reported an absence of tobacco product marketing. Banning tobacco product marketing limits the exposure of individuals, especially young people, to promotional messages that glamorize or

normalize smoking. Without constant exposure to advertising, individuals may be less likely to perceive smoking as socially desirable or attractive. A non-significant statistical correlation between tobacco product marketing and cigarette smoking among study participants was found by the chi-square test of independence($\chi 2=0.285, df=1, p=0.594$).

Findings from this study were concurrent with those of a study carried out in Pakistan where the marketing of tobacco products was not associated with smoking(Gilani & Leon, 2013). However, another study carried out in Nigeria revealed that the presence of marketing tobacco products increased the odds of smoking among study participants by 2.5(Ogbuabor et al., 2023).

As indicated in Tables 9 and 10 above, Concerning the year of study of the study respondents, close to a quarter (24.1%) of the study respondents who were smokers were in the first years. First-year students are often exposed to new social environments and peer groups where smoking may be more prevalent or socially accepted. There is a possibility that certain students will start smoking or maintain their current smoking habits due to peer pressure and the need to blend in with new friends or social circles.

A statistically significant correlation between the study respondents' year of study and cigarette smoking was revealed by the chi-square test of independence ($\chi 2=22.373, df=3, p^*=<0.000$).

Further analysis with logistic regression (table 10) revealed a statistical association between the year of study and cigarette smoking (P=0.004), translating that the year of study was an independent factor for smoking behavior. Furthermore, first-year students had a 4.5-fold higher likelihood of smoking than fourth-year students. For many students, making the switch from high school to a college or university can be difficult and stressful. The newfound freedom, academic pressure, and social changes during this period may lead some students to experiment with smoking as a coping mechanism for managing stress or anxiety.

According to one of the key informants' narratives, these results were at odds with the qualitative findings.

"…*For many first-year students, entering college or university represents a newfound sense of independence and autonomy. Some students may use this opportunity to experiment with risky behaviors, including smoking, as a way to assert their independence and explore new experiences*…." (KII, university psychologist).

Findings from this study agreed with those of a study carried out in Gambia where newly enrolled students were at increased odds of smoking(Jallow et al., 2017). This was contrary to a study done in China where the year of study of the study participants was not associated with smoking(Peng et al., 2019).

4.8 Descriptive Statistics on Psychosocial Factors

Table 11: Descriptive Statistics on Psychosocial Factors

Independent variables	Categories	Frequencies	Valid percentage
Physical activities	yes	140	39.3
	no	216	60.3
Alcohol drinking	yes	113	31.7
	no	243	68.3
Stress	yes	229	64.3
	no	127	35.7
Family history	yes	67	18.8
	no	289	81.2
Peer influence	yes	152	42.7
	no	204	57.3

Table 11 above provides descriptive statistics on psychosocial factors influencing smoking among the study respondents. In terms of alcohol consumption, nearly 25% of study participants reported consuming alcohol, whereas over half (68.3%) of participants said they did not. In terms of stress, over half of study participants—64.3%—reported going through stressful life events, whereas over a quarter—35.7%—

of study participants said they had not. Concerning a family history of smoking, only a few (18.8%) of the study respondents confirmed the presence of a family history of smoking while a majority (81.2%) of the study respondents reported the absence of a family history of smoking. Concerning peer influence, close to half (42.7%) of the study respondents reported the presence of peer influence while more than half (57.3%) of the study respondents reported the absence of peer influence. Lastly concerning, physical activity, more than a quarter (39.3%) of the study respondents reported engaging in physical activities while more than half (60.3%) of the study respondents didn't engage in physical activities.

4.9 Multiple responses on physical activity engagement

Table 5: Multiple responses on physical activity engagement

Types of physical activities Frequencies				
		Responses		Percent of
		N	Percent	Cases
Physical activity	swimming	28	12.3%	21.2%
	weight lifting	29	12.7%	22.0%
	walking	91	39.9%	68.9%
	running	80	35.1%	60.6%
Total		**228**	**100.0%**	**172.7%**

Table 12 provides multiple responses on physical activity engagement by the study respondents. Walking was the most (68.9%) reported form of physical activity this could be linked to being one of the easiest physical exercises to engage in, more than half (60.6%) of the study respondents reported practicing running, the least (21.2%) practice form of physical activity was swimming while only a few(22%) of the study partakers participated in weight lifting.

4.10 Cross-tabulation between Psychosocial Factors and Cigarette Smoking

Table 13: Cross-tabulation between Psychosocial Factors and Cigarette Smoking

Independent variables	Categories	Dependent Variable (Smoking)		Statistical Significance (Chi-square Test)
		YES(N=48)	NO(N=308)	
Physical activities	yes	24(17.1%)	116(82.9%)	$\chi2$=2.649
	no	24(11.1%)	192(88.9%)	df=1
				p=0.104
Alcohol drinking	yes	25(22.1%)	88(77.9%)	$\chi2$=10.596
	no	23(9.5%)	220(90.5%)	df=1
				p=0.001
Stress	yes	40(17.5%)	189(82.5%)	$\chi2$=8.735
	no	8(6.3%)	119(93.7%)	df=1
				p=0.003
Family history	yes	25(37.3%)	42(62.7%)	$\chi2$=40.18
	no	23(8%)	266(92%)	df=1
				p=<0.000
Peer pressure	yes	22(14.5%)	130(85.5%)	$\chi2$=0.223
	no	26(12.7%)	178(87.3%)	df=1
				p=0.637

Table 6:Binary logistic regression table with significant variables on Psychosocial Factors

								95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	drinking alcohol	-.912	.353	6.664	1	.010	2.490	1.246	4.976
	no						**ref**		
	stressful life events	1.562	.444	12.372	1	.060	4.769	1.997	3.390
	no						**ref**		
	family history of smoking	1.945	.360	29.208	1	.000	6.993	3.454	14.157
	no						**ref**		
	Constant	**-4.882**	**1.041**	**21.971**	**1**	**.000**	**.008**		

The association between psychosocial factors and smoking was established by the chi-square test of independence and binary logistic regression. As indicated in Tables 13 and 14 above, only a few (22.1%) of the study respondents who reported drinking

alcohol were also smoking. People with alcohol use disorders, or alcoholism, are more likely to smoke cigarettes because alcohol and tobacco are frequently combined. This co-occurrence of substance use can be attributed to shared risk factors, such as genetic predisposition, environmental influences, and social contexts that promote the use of both alcohol and tobacco. The chi-square test of independence showed a statistically significant relationship between alcohol drinking and cigarette smoking($\chi 2=10.596, df=1, p=0.001$).

Further analysis with logistic regression (table 14) revealed a statistical association between alcohol drinking and cigarette smoking (P=0.01), translating that drinking alcohol was an independent factor for smoking behavior. In addition, study respondents who reported drinking alcohol were 2.5 times more likely to engage in smoking as compared to their counterparts.

Findings from this study were concurrent with those of a study carried out in Kenya where drinking alcohol, increased the odds of smoking behavior(Ngaruiya et al., 2018). This was contrary to another study carried out in United Kingdom where alcohol drinking was not associated with smoking(Tate et al., 2021).

As indicated in Tables 13 and 14 above, out of the study participants who reported experiencing stressful life events, a mere 17.5% reported smoking as one of those stressful life events. Smoking is a common coping strategy used by people to reduce stress or control unpleasant emotions. People who smoke do so as a temporary diversion or release from stressors, which makes them turn to cigarettes as a coping mechanism for tension and anxiety. There is a statistically significant correlation between stressful life events and cigarette smoking, as demonstrated by the chi-square test of independence($\chi 2=8.735, df=1, p=0.003$). However, Further analysis with logistic regression (table 14) revealed no association between stressful life events and cigarette

smoking (P=0.06), translating that stressful life events were not an independent factor for smoking.

According to one of the key informants' narratives, these results were at odds with the qualitative findings.

"Stressful events or situations can act as triggers for smoking cravings and relapse among individuals attempting to quit smoking. The association between stress and smoking cues may lead to increased cravings for cigarettes, making it more challenging for individuals to resist smoking during times of stress…." (KII, student leader)

The results of the present investigation were in agreement with those of a Ghanaian study (Doku et al., 2019). This was in contrast to another US study (Rodgers et al., 2021) that found stressful life events raised the likelihood of smoking by 5.3.

As indicated in Table 13 above, concerning engaging in physical activities, the majority (82.9%) of the study respondents who reported engaging in physical activities were non-smokers. Endorphins are the body's natural mood enhancers, and research has shown that they are released during physical activity to lower stress and elevate mood. Regular physical activity can assist people in better managing their stress levels without resorting to smoking as a coping method. Among study participants, there was no significant correlation found by the chi-square test of independence between physical activity and cigarette smoking ($\chi 2=2.649, df=1, p=0.104$).

Findings from this research agreed with those of a study carried out in Italy where engaging in physical activities was not associated with smoking(Masiero et al., 2020). This was divergent to another study carried out in United Kingdom where absence of physical activities increased the odds of smoking by 2.3(Taylor et al., 2010).

As indicated in Tables 13 and 14 above, concerning family history of smoking habit, more than a quarter (37.3%) of the study respondents who reported smoking had a family history of smoking. Family members who smoke may provide easier access to tobacco products for younger individuals in the household. Exposure to tobacco products at home increases the likelihood of experimenting with cigarettes or other tobacco products, particularly among adolescents who are curious or susceptible to peer influences. A statistically significant correlation between cigarette smoking and a family history of smoking was revealed by the chi-square test of independence ($\chi 2=40.18, df=1, p=<0.000$). A more thorough investigation using logistic regression (table 14) showed a statistically significant correlation (P=<0.000) between cigarette smoking and family history of smoking, indicating that smoking behavior was independently influenced by smoking history. Furthermore, the likelihood of smoking was lowered by 6.9 in the absence of a family history of smoking. Individuals without a family history of smoking may perceive smoking as a riskier behavior compared to those with a family history of smoking. Without family members who smoke, they may be less likely to underestimate the health risks associated with smoking and may have a stronger awareness of the dangers of tobacco use.

Findings from this study agreed with those of a study carried out in USA which found a statistical association between family history of smoking and smoking(Tully et al., 2019b). This was contrary to a study done in Northern Ethiopia family history of smoking was not related with smoking(Eticha & Kidane, 2014).

As indicated in Table 13 above, concerning peer pressure, the majority (87.3%) of the study respondents who reported the absence of peer pressure were non-smokers. Peer interactions can shape individuals' attitudes, beliefs, and perceptions about smoking. Positive attitudes towards smoking within the peer group, along with peer endorsements

of smoking behavior, can influence individuals' perceptions of smoking as desirable or acceptable behavior. Peer pressure can contribute to the normalization of smoking and the perception that smoking is a socially desirable or necessary behavior in certain social contexts. Among study participants, the chi-square test of independence showed no significant correlation between peer pressure and cigarette smoking ($\chi 2=0.223, df=1, p=0.637$).

The results of the present investigation were in line with those of a Nigerian study (Ukwayi et al., 2012) that found no correlation between smoking and peer pressure. This was in contrast to another Ethiopian study (Leshargie et al., 2019) that found that smoking was more likely when peer pressure was present.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The study's summary, conclusion, and recommendations are all included in this section.

5.2 Summary

Objective one: To ascertain the prevalence of smoking among Mount Kenya University students, Kiambu County, Kenya.

In this study, the prevalence of smoking was 13.5% among the study participants, with several factors influencing the odds of smoking. Increased likelihood was associated with alcohol consumption (OR 2.5,95%CI;1.243-4.97), a family history of smoking (OR 6.9,95%CI;3.45-14.16), being male (OR 2.3,95%CI;1.138-4.775), and being a first-year student (OR 3.6,95%CI;2.507-18.698). Conversely, reduced odds were linked to lower pocket change (<1000 Ksh)(OR 6.8,95%CI;2.507-18.698) and awareness of smoking-related risks such as lung cancer (OR 3.5,95%CI;1.79-6.77) and oral health problems (OR 2.8,95%CI;1.36-5.78). This is a public health concern as the university policy prohibits drugs and substance abuse among university students. In this study, cigarettes were the most (83.3%) smoked tobacco product while kuber was the least (17.7%) smoked tobacco product. Concerning days spent smoking per week, close to half (41.7%) of the study reported utilizing 1-3 days of smoking while only a few (20.8%) of the study respondents reported smoking more than six days in a week. Lastly concerning the number of sticks smoked per day, the majority of the study respondents reported smoking 1-5 sticks while only a few smoked more than five sticks per day. Concerning attempts to quit smoking, more than a quarter (41.7%) of the study respondents reported a will to quit smoking while more than half (58.3%) of the study partakers had no will quit smoking.

Objective two: To assess how students' knowledge of the risk effects of smoking influence smoking among Mount Kenya University students, Kiambu County, Kenya.

Regarding, how students' knowledge of the risk effects of smoking influence smoking; knowledge of lung cancer as a risk effect of smoking, knowledge of oral health problems as a risk effect of smoking, and knowledge of respiratory diseases as a risk effect of smoking were statistically associated with smoking, hence these variables were imported to binary logistic regression for further analysis. Knowledge of reproductive health issues as a risk effect of smoking and knowledge of CVDs as a risk effect of smoking were found not to be statistically associated with smoking.

Objective three: To assess social economic/demographic factors that influence smoking among Mount Kenya University students, Kiambu County, Kenya.

Concerning social economic/demographic factors influencing smoking, Employment status, pocket change, gender of the study respondents, and year of study of the study respondents were statistically associated with smoking, hence these variables were imported to binary logistic regression for further analysis. The age of the study respondents and the marketing of tobacco products were found not to be statistically associated with smoking.

Objective four: To determine psychosocial factors influencing smoking among Mount Kenya University students, Kiambu County, Kenya.

Concerning psychosocial factors influencing smoking; alcohol drinking, stressful life events, and a family history of smoking were statistically associated with smoking, hence these variables were imported to binary logistic regression for further analysis. Engaging in physical activities and peer pressure were found not to be statistically associated with smoking.

5.3 Conclusions

Objective one: To ascertain the prevalence of smoking among Mount Kenya University students, Kiambu County, Kenya.

In this study, the prevalence of smoking was 13.5% among the study participants. This is a public health concern as the university policy prohibits drugs and substance abuse among university students. In this study, cigarettes were the most (83.3%) smoked tobacco product while Kuber was the least(17.7%) smoked tobacco product.

Objective two: To assess how students' knowledge of the risk effects of smoking influence smoking among Mount Kenya University students, Kiambu County, Kenya.

Regarding, how students' knowledge of the risk effects of smoking influence smoking; Being knowledgeable of lung cancer as a risk effect of smoking and being knowledgeable of oral health problems as a risk effect of smoking reduced the odds of smoking.

Objective three: To assess social economic/demographic factors that influence smoking among Mount Kenya University students, Kiambu County, Kenya.

Concerning social economic/demographic factors influencing smoking, having a lower pocket change of less than 1000 Ksh reduced the odds of smoking while being a first-year student, and being a male amplified the odds of smoking.

Objective four: To determine psychosocial factors influencing smoking among Mount Kenya University students, Kiambu County, Kenya.

Concerning psychosocial factors influencing smoking; alcohol consumption increased the odds of smoking while the absence of a family history of smoking reduced the odds of smoking.

5.4 Recommendations

5.4.1 Recommendations from this Study

1. The Ministry of Education, NACADA, the university, and other relevant stakeholders should develop and implement health education programs which include targeted messaging that highlight lesser-known consequences of smoking, particularly in relation to cardiovascular diseases, reproductive health issues like infertility and pregnancy complications. Additionally, stress management skills are integrated into youth programs and school curriculum as well as establishing peer education initiatives and trainings to students and young leaders to become anti-smoking advocates within their social group.

2. The Ministry of Education, NACADA, the university, and other relevant stakeholders should Implement comprehensive substance abuse prevention programs on college campuses that address both alcohol and tobacco use. These programs should include educational workshops, peer support groups, and awareness campaigns that highlight the risks related to both alcohol and tobacco use.

3. The Ministry of Education, NACADA, the university, and other relevant stakeholders should provide tobacco cessation programs tailored specifically for first-year students aiming to support those who want to quit smoking or reduce their tobacco use. These programs should include counseling, nicotine replacement therapy, support groups, and educational resources to help students overcome nicotine addiction.

4. The Ministry of Education, NACADA, the university, and other relevant stakeholders should develop and implement Interactive workshops and presentations that engage students more effectively than traditional lectures. These sessions can use multimedia tools, such as videos, infographics, and interactive simulations, to illustrate the influence of smoking on lung health, oral health, and the development of lung and oral cancer.

5.4.2 Recommendations for Further Research

1. This study recommends intervention research to assess the effects of a text message smoking cessation intervention among smokers.

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Appendices

Appendices 1: Informed consent form

Participants name (Optional)	Interview date
Researcher: Dennis Mutuma	Mobile: 0722721139
Project/Research Title: **FACTORS INFLUENCING CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS, MOUNT KENYA UNIVERSITY IN KIAMBU COUNTY, KENYA.**	

1. Participating in this research will not have any personal benefits. However, others might benefit through knowledge which will be gained through study.
2. I confirm that I am participating in this research voluntarily.
3. I am aware that taking part in this study's interview will not result in payment or other benefits.
4. The expected risk from this study will be loss of confidentiality i.e., information risk because it will collect information about you. However, I will not keep your name or other information that can identify you directly so I will be using codes.
5. I have the right not to answer any question and to end the research interview anytime I feel like.
6. I understand that the interview will take about 30 minutes.
7. I acknowledge that my privacy as a participant will be protected and that the researcher will not use the information from the current study interview to personally identify me in any reports.
8. I've read and comprehended the information given to me about this research interview.

By signing this form, I agree to the terms indicated above.

Participants' signature……. ……Date ……

Researcher's signature……Date……

Appendices 2: Questionnaire
Section A

1. Are you currently employed

    1. Yes [ ]
    2. No [ ]

2. What is your pocket change per week

    1. <1000 Ksh [ ]
    2. 1001-1500 Ksh [ ]
    3. 1501-2000 Ksh [ ]

3. What is your age

    1. 16-20 [ ]
    2. 21-25 [ ]
    3. 26-30 [ ]

4. What is your gender

    1. Male [ ]
    2. Female [ ]

5. What is your current year of study

    1. first year [ ]
    2. second year [ ]
    3. third year' [ ]
    4. fourth year [ ]

6. Have you ever experienced advertisements for tobacco products

    1. yes [ ]
    2. no [ ]

Section B

7. Do you engage in smoking of tobacco products

    1. Yes [ ]
    2. No [ ]

8. If yes for question 7 above, which tobacco product do you smoke

    1. Cigarette [ ]
    2. Kuber [ ]

9. How many days do you spend in a week smoking

    1. 1-3 [ ]
    2. 4-6 [ ]
    3. >7 [ ]

10.How many sticks of tobacco product do you smoke

1. 1-5 [ ]
2. 6-10 [ ]

Section C

Below is a questionnaire designed to assess knowledge of lung cancer as a risk effect of smoking. Respondents will rate their agreement with each statement on a Likert scale ranging from 1 to 5

Part A

	SD	D	N	A	SA
Compared to non-smokers, smokers have a higher risk of cancer of the lungs.					
Of all the cancers brought on by smoking, cancer of the lungs is one of the most prevalent.					
The risk of cancer of the lungs, particularly in smokers, is increased by a family history of the disease.					
The risk of cancer of the lungs can be considerably decreased by giving up smoking.					
Smoking is a major cause of lung cancer.					

Part B

	SD	D	N	A	SA
I am aware of the specific cardiovascular diseases that are linked to smoking.					
I am aware of the connection between smoking and coronary artery disease.					
The risk associated with cardiovascular diseases, such as heart disease and stroke, is increased by smoking.					

Part C

	SD	D	N	A	SA
Smoking during pregnancy raises the possibility of problems like preterm delivery and low birth weight.					
Smoking can negatively impact fertility in both men and women.					
Smoking can affect the reproductive organs and hormonal balance in men and women					

Part D

	SD	D	N	A	SA
Smoking can increase the risk of gum disease and periodontal problems.					
Smoking can cause tooth discoloration, staining, and bad breath.					
In addition to other oral lesions, smoking increases the risk of cancer of the mouth.					

Part E

	SD	D	N	A	SA
Emphysema and chronic bronchitis are two conditions associated with chronic obstructive pulmonary disease (COPD), which can be brought on by smoking.					
Smoking is a leading cause of lung cancer and can significantly increase the risk of developing this disease.					
Smoking can exacerbate asthma and other respiratory conditions					

Section D

12. Do you engage in physical activities

1. Yes [ ]
2. No [ ]

13. If yes for question 12, which type of physical activities do you engage in

1. Swimming [ ]
2. Weight lifting [ ]
3. Walking [ ]
4. Running [ ]

14.Do you take/consume alcoholic beverages

1. Yes [ ]
2. No [ ]

15. Do you experience stressful life events

1. Yes [ ]
2. No [ ]

16. Do you have a family history of smoking

    1. Yes [ ]
    2. No [ ]

17. Does your friendly influence you to engage in smoking

    1. Yes [ ]
    2. No [ ]

Appendix 3: Key Informant Interview Guide
Overview

Dennis Mutuma Magiri is my name, and I attend Mount Kenya University to pursue a master's degree with a focus on disease control and epidemiology. At Mount Kenya University in Kiambu County, Kenya, I'm involved in a study on the factors impacting university students' cigarette smoking. To participate and contribute, I kindly ask you to dedicate 15 to 20 minutes to this discussion. Your involvement and honest opinion will greatly be appreciated.

1. In your opinion what is the prevalence of smoking among Mount Kenya University students, in Kiambu County, Kenya?
2. In your opinion what is the university student's knowledge of risk effects associated with smoking among Mount Kenya University students, Kiambu County, Kenya?
3. In your opinion what are social economic/demographic factors that influence smoking among Mount Kenya University students, Kiambu County, Kenya?
4. In your opinion what are psychosocial factors influencing smoking among Mount Kenya University students, in Kiambu County, Kenya?

Appendices 4: ERC Certificate

Mount Kenya University

REF: **MKU/ISERC/3328** Date: 09 November 2023
TO: **DENNIS MUTUMA MAGIRI**
REG: **MPH/2019/42995**

Dear Sir/Madam,

RE: FACTORS INFLUENCING CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS, MOUNT KENYA UNIVERSITY IN KIAMBU COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2372.** The approval period is **09/11/2023 - 08/11/2024.**

This approval is subject to compliance with the following requirements;

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

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

Yours sincerely,

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

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika. Tel: +254 67 2820 000,
Cell: +254 720 790 796, 0709 153 000
Email:info@mku.ac.ke, Web: www.mku.ac.ke
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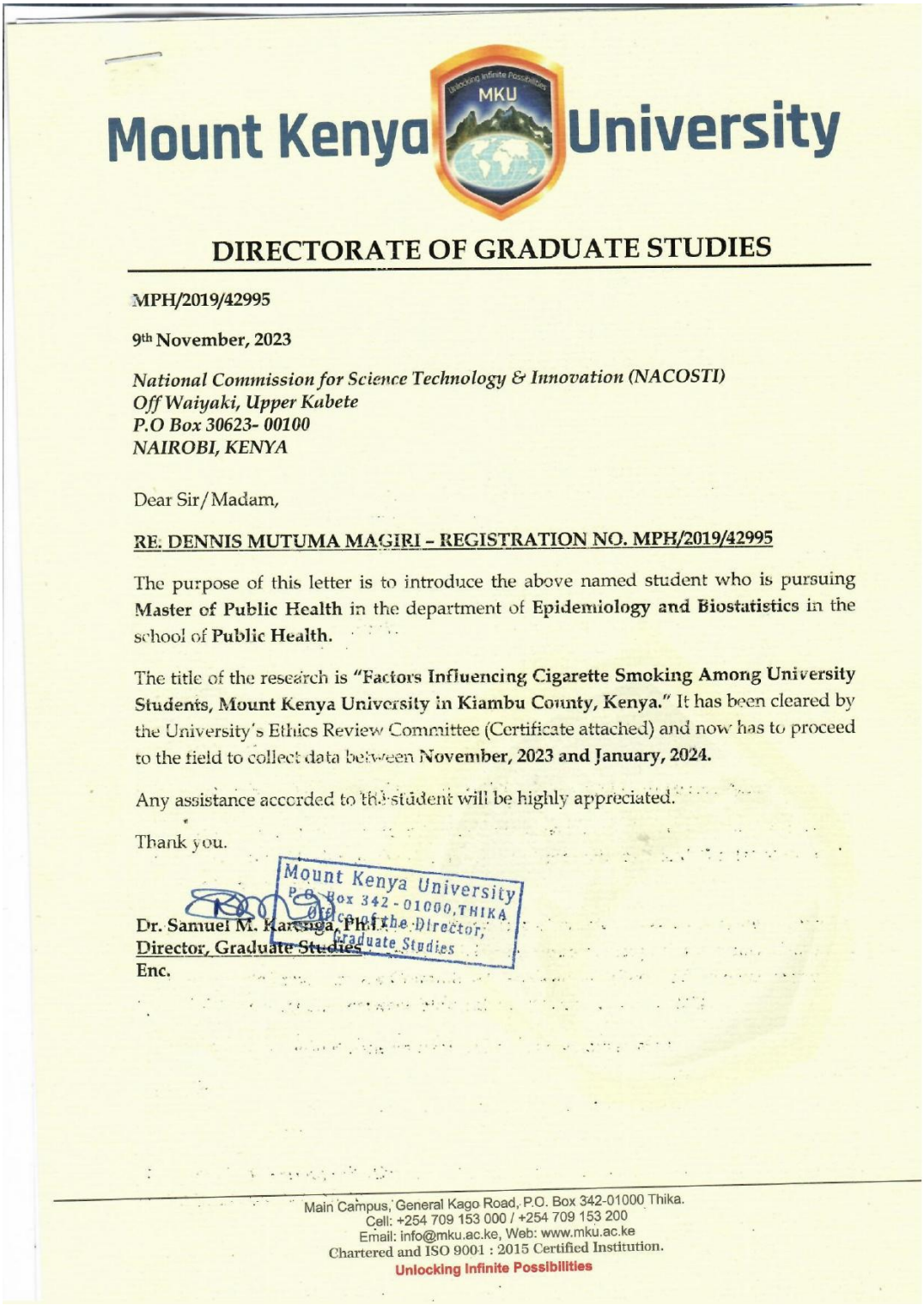
Appendices 5: Introductory letter



Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MPH/2019/42995

9th November, 2023

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE. DENNIS MUTUMA MAGIRI – REGISTRATION NO. MPH/2019/42995

The purpose of this letter is to introduce the above named student who is pursuing **Master of Public Health** in the department of **Epidemiology and Biostatistics** in the school of **Public Health.**

The title of the research is **"Factors Influencing Cigarette Smoking Among University Students, Mount Kenya University in Kiambu County, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **November, 2023 and January, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies

Dr. Samuel M. Karenga, PhD.
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
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Appendices 6: NACOSTI License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **381083**

Date of Issue: **15/November/2023**

RESEARCH LICENSE

This is to Certify that Mr.. Dennis Mutuma Magiri of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kiambu on the topic: FACTORS INFLUENCING CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS, MOUNT KENYA UNIVERSITY IN KIAMBU COUNTY, KENYA. for the period ending : 15/November/2024.

License No: **NACOSTI/P/23/31484**

381083

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Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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See overleaf for conditions

Appendices 7: Similarity Index Report

FACTORS INFLUENCING CIGARETTE SMOKING AMONG UNIVERSITY STUDENTS, IN MOUNT KENYA UNIVERSITY KIAMBU COUNTY, KENYA

ORIGINALITY REPORT

14%	10%	5%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

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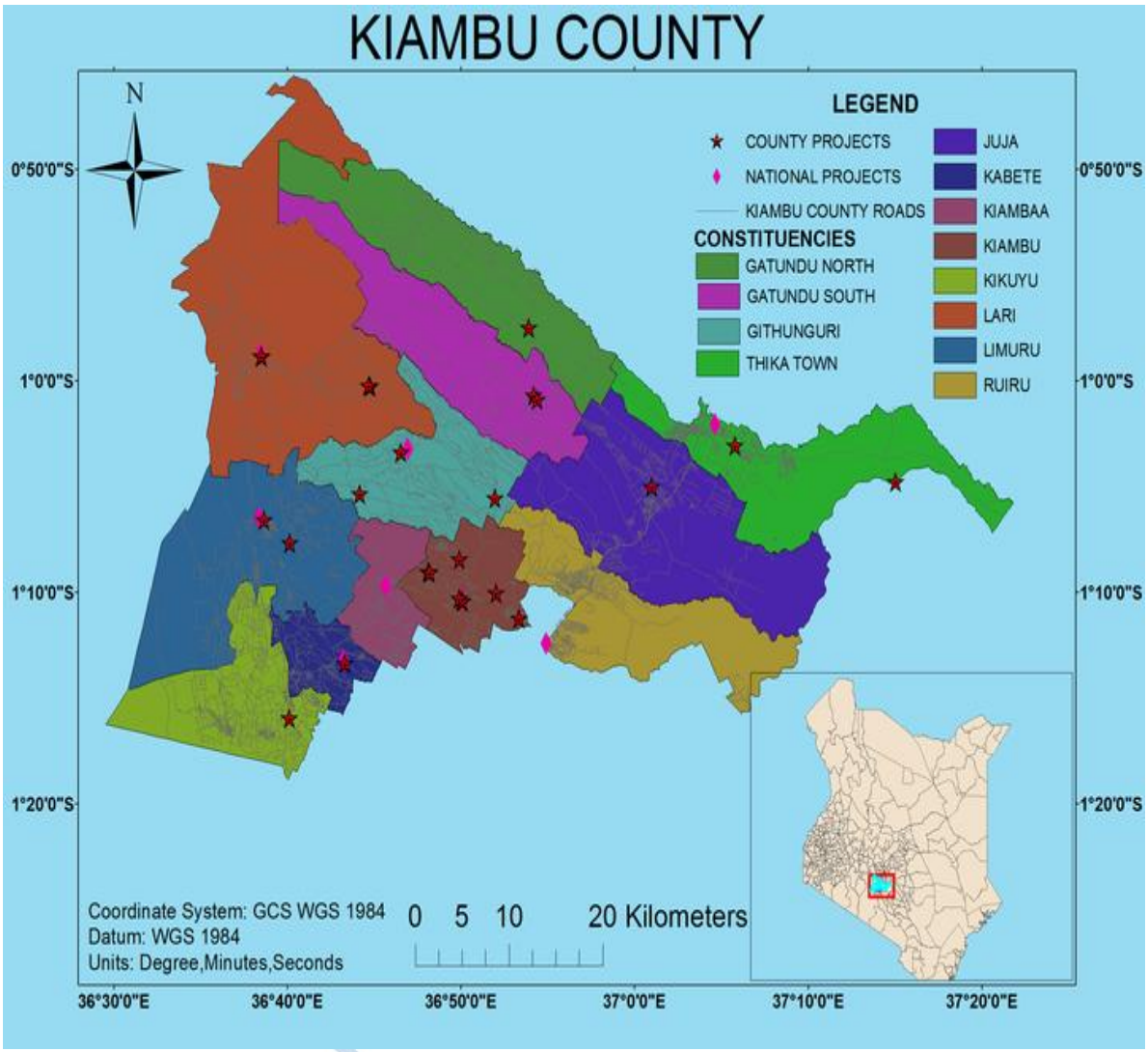
Appendices 8: Map of the Study Area



Source: Kiambu.co.ke