PREVALENCE OF SUICIDAL IDEATIONS AMONG STUDENTS WITH LIFETIME SUBSTANCE USE IN UNIVERSITIES IN KILIFI COUNTY, KENYA

DR. RUTH DAMA MASHA

REG. NO H58/6651/2017

DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF NAIROBI

A RESEARCH REPORT SUBMITTED IN PARTIAL FULFILMENT FOR THE AWARD

OF DEGREE OF MASTERS OF MEDICINE IN PSYCHIATRY

August 2022

DECLARATION

I, Ruth Dama Masha, do hereby declare that, this is my original work carried out in fulfillment of the requirement of the degree of Masters of Medicine in Psychiatry at The University of Nairobi. I further declare that this has not been presented for the award of any other degree or to any other University.

Author: Ruth Dama Masha

Signature .....

Date 26th August 2022

Adm. No: H58/ 6651/ 2017

Department of Psychiatry,

University of Nairobi

APPROVAL BY SUPERVISORS

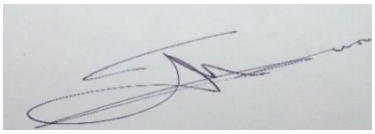
This thesis has been submitted for review with our approval as university supervisors

Dr. John Mburu

Senior Lecturer

Department of Psychiatry

University of Nairobi



Date……26th August 2022

Dr. Teresia Mutavi

Lecturer

Department of Psychiatry

University of Nairobi

Date……26th August 2022

DEDICATION

To all the University students who have lost hope and have at any one time thought of ending their life. We all fall, we break and we fail but then we rise, heal and overcome.

ACKNOWLEDGEMENT

I wish to thank the Almighty God for his protection, guidance, favor and grace throughout my course.

I would also like to extend my heartfelt gratitude to my supervisors Dr. John Mburu and Dr. Teresia Mutavi who practically walked with me in this journey. They were always available and offered timely responses.

To all my colleagues, friends and family members for their encouraging words, advice, critique and support. I will forever be grateful.

Finally, to the Department of Psychiatry, School of Medicine, Ethics Board and to all participants for making this project possible.

To all of you, I say, Asante (Thank you)

Table of Contents

LIST OF ABBREVIATIONS

ASSIST	Alcohol Smoking and Substance Involvement Screening Test
CDC	Centre for Disease Control and Prevention
SBQ-R	Suicide Behavior Questionnaire - Revised
DSM-V	Diagnostic and Statistical Manual of Mental disorders, fifth edition
KNH	Kenyatta National Hospital
KNH/UON ERC	Kenyatta National Hospital/ University of Nairobi Ethics Research Committee
PHQ-9	Patient Health Questionnaire-9
TRD	Treatment Resistant Depression
UON	University of Nairobi
MKU	Mount Kenya University
WHO	World Health Organization
GBD	Global Burden of disease
SI	Suicidal Ideation
ONS	Office of National Statistics

OPERATIONAL DEFINITIONS

Suicidal ideation	Constant thoughts or unusual preoccupation with suicide.
Suicidal behaviors	Tendencies or thoughts that put one at risk of committing suicide.
Suicide	The act of intentionally ending one's life.
Lifetime Substance Use	Any use during the person's life (lifetime prevalence), often called 'lifetime experience' with drugs.
Treatment Resistant Depression	An inadequate response to at least one antidepressant trial of adequate dose and duration.

ABSTRACT

Background: Suicide is a serious yet neglected public health concern, responsible for 1.4% of all deaths globally which estimates to about 800,000 people. The burden is much higher in adolescents and young adults, accounting for 8.64% among 20-24 year olds. In most cases the causes of death by suicide go undetected or unreported because Suicide under Kenyan law is a criminal offence as depicted in Section 22 of the Penal Code. Substance (Drug) Abuse is increasing in Kenya and especially among the youth. As per WHO the current statistics indicate that more than half of drug users are aged 10-19 years.

Study Objective: The study sought to determine the Prevalence of Suicidal Ideations among Students with Lifetime Substance Use in Kilifi County

Study Methodology: The study was a quantitative cross-sectional study. Systematic random sampling was used to select the study participants. Data from the study was evaluated in RStudio Version 2021.09.2 Build 382. Bivariate and multivariate logistic regression were used to model the outcomes. The results were presented in pie charts, summary tables and narratives.

Results: This study estimated a lifetime prevalence of substance-use of 91.9%. (n = 308}; and a 90-day prevalence of substance-use of 84.5% (n = 238) among students in Kilifi, Kenya. Alcohol had the highest lifetime prevalent among the study participants (n = 264, 78.8%); followed by tobacco products (n = 162, 48.4%) and cannabis (n = 138, 41.3%). This study also estimated a 90-day prevalence of 69.0%, 40.3% and 29.3% for alcohol, tobacco and cannabis respective (n = 231, 135 and 98 in that order). Multivariate analysis returned a significant association between 90-day substance use and whether the student had ever told someone about his intention to commit suicide (OR = 3.41, p = 0.032). The association

between ninety-day substance use and year of study was significant too ((OR = 2.71, p = 0.032).

Conclusion: Alcohol, tobacco and cannabis were the most prevalent substances in the life of the students and within 90 days leading to this study. Unlike students in their fourth year of study, students in third year were also more likely to have used substance within 90 days leading to this study.

Recommendation: Affected individuals should seek professional support to help in managing suicidal behavior and other substance related challenges. Increase public awareness on the risks of substance use involvement; ranging from health risk to legal penalties attached to such acts. Initiation of more stringent policies and watertight approach to their implementation. Larger studies that span across the whole county should be done to examine the risk factors of suicidal ideation and attempts among youths in the whole country; and their possible correlation with substance use. Lastly, college authorities should initiate mentorship programs in schools as a mitigation against substance-use behavior among school-going youths.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Suicidal ideation is defined as the thoughts of killing or harming oneself and is prevalent among young adults and adolescents. The Center for Disease Control and Prevention in 2012 and the national survey data showed that 15.8 percent of students with low grades reported having suicidal thoughts in 2011 (Zhang, & Wu 2014). People with serious suicidal thoughts are more likely to attempt suicide than those without suicidal thoughts. Suicidal ideation serves as a critical marker for psychopathology and behavioral issues among young people. Therefore, it is important to investigate suicidal ideation and its related issues. Suicide is a costly affair, not only does it deprive one's life but also imposes a lot of mental and emotional stress on the family members and friends and that can really strain them (Ivey-Stephenson et al., 2020).

Predictors of suicidal ideations and risk factors include, but are not limited to a history of previous suicide attempts, certain demographic variables and mental disorders. Lifetime Substance Use is another type of risky behavior among young adults and adolescents. Common drugs used by people in universities include alcohol, marijuana, cigarettes, as well as a hoard of other illegal drugs. The range of substances used depends on availability, financial endowment of the student as well as the regulatory environment surrounding the university and home. Information from the national sample in the United States indicates that 37 percent of young people between 12 and 17 years used alcohol or drugs in their lifetime. 39 percent used alcohol while 19 percent used illegal and nonmedical drugs (Zhang, & Wu 2014). Young people between the age of 21 and 25 tend to be the highest users of cigarettes (34.1 %) and alcohol (69.2%). Therefore, the rate of alcohol, cigarette, or drug use in general

tends to increase as the person grows older. The older young adults are in an age group which is typically populated with college-going learners.

Lifetime Substance Use and suicidal ideation often have a correlation. The high rates of suicidal ideation are associated more with drug users as compared to nonusers. Young people who regularly smoke report having suicidal thoughts more often than nonsmokers (Zhang & Wu 2014). Heroin users show a similar trend with lifetime users reporting more suicidal ideation than nonusers and periodic users. Young adults and adolescents make up a high-risk group for lifetime substance use and suicidal ideation problems. Research on the relationship between these two factors is far from conclusive.

1.1.2 Definition of Terms

Suicide ideation (SI) is a broad term often used to describe a range of contemplations, thoughts, wishes, and considerations regarding taking one's life. This feeling is commonly associated with the lack of purpose and meaning for one's life as well as the lack of control for self-harming tendencies.

Lifetime Substance Use is also often called 'lifetime experience 'and refers tois any use during the person's life (lifetime prevalence), with drugs. 'Lifetime experience' yields bigger numbers, but it does not adequately depict the current drug situation (among adults) because it is a cumulative measure that includes persons who have taken drugs in the past.

1.2 Background of the Study

1.2.1Global Review of Suicide Ideation and Lifetime Substance Use

The World Health Organization in 2019 estimated that approximately 800000 people die annually due to suicide. For each suicide that occurs, there are more people who try and

commit suicide. The biggest risk factor for the general population is a prior suicide attempt. Suicide is the fourth leading cause of deaths in people between 15 and 19 years around the world. This age bracket is partly inclusive of the college population targeted by this study. The World Health Organization also estimated that 79 percent of the suicides around the world occur in the low- and middle-income nations. (WHO, 2019).

Most of the people at high risk of death through suicide are those with mental disorders, especially those with depression or those with alcohol use disorders. In most low income nations there is a strong connection with mental disorders and suicide attempts. (Sareen et al. 2011). Majority of the suicides occur impulsively during moments of crisis with such persons experiencing a breakdown in the ability to handle stresses, relationship break-ups, chronic illnesses and pain, and financial problems (WHO 2019).

Apart from those people who are prone to suicidal thoughts include; those who experience disaster, violence, abuse, loss, and sense of isolation. These qualities are consistent for all suicide cases around the world (WHO, 2020). The rates of suicide are also high among people who face discrimination in different forms around the world. For example, prisoners, bisexual, transgender, intersex, gay, and lesbian persons are more likely to commit suicide in countries where they face discrimination.

Czeisler et al,2020 asserts that the method of suicide also varies from one country to another even though 20 percent of the global deaths resulting from suicide are caused by self-poisoning using pesticides. These deaths occur in the rural agricultural regions of middle- and low-income countries. The knowledge of common methods used to commit suicide is essential in creating preventive strategies. Prevention methods such as restriction of access or discouraging use of pesticides ensures that suicide rates reduce (Czeilsler et al., 2020). However other methods include use of firearms and hanging. (WHO, 2019)

Lifetime Substance Use is by itself a menace in the world. Nearly 11 million people inject drugs around the world with 5.5 million people who inject drugs have hepatitis C while 1 million have both hepatitis C and HIV (WHO, 2019). The World Health Organization estimates that close to 3.3 million people die every year due to harmful use of alcohol. On average, every individual above the age of 15 years drinks 6.2 liters of pure alcohol every year. Approximately 38.3 percent of people across the world drinks alcohol which implies that those who consume it take 17 liters every year. Approximately 31 million people suffer from Lifetime Substance Use globally.

1.2.2 Regional Review of Suicide Ideation and Lifetime Substance Use

Africa is the Second biggest but most populous continent in the world. The population of Africa is over 1 billion people (Mars et al., 2014). The continent has rural, urban, and semi-rural dwellings. This heterogenous population is made up of different religious, ethnic, and cultural groups. The continent also faces war, economic instability, and political upheavals. Even though there are high mortality rates in Africa, the suicide rates are thought to be lower than those of other continents. This is explained by the lack of information regarding incidences and patterns of suicide, many cases go unreported and statistics from hospitals underestimate the prevalence of suicide in Africa thus accounting for the lower numbers

A research presented by Mars et al., (2013) examined regional incident data available for 16 of the continent's 53 countries. These countries represented 60 percent of the population of Africa. However, suicide data was only available for 20 percent of the countries (7 out of 53). These estimates showed the presence of over 34,000 suicides annually in Africa (interquartile range of 13,141 to 63,757). The incident rate for suicide is

approximated to be 3.2 people for every 100,000 persons. Mars et al., (2013) quoted the recent estimates by Global Burden of Disease (GBD) which estimated that there are 49,558 suicide deaths per year which is higher. This estimate reduces within the interquartile estimate by Mars et al., (2013). The research also explained that the most frequently used methods were pesticide poisoning and hanging. The risk factors reported by Mars et al., (2013) for suicidal ideation and suicide included interpersonal differences, physical and mental health problems, socioeconomic issues, and drug/alcohol abuse.

1.2.3 Local Review of Suicide Ideation and Lifetime Substance Use

The Kenyan situation is highly delicate. One of the reports by Ndungu (2018) indicates that Kenyan police in Muranga blame the rise in suicide cases on drug use. The police divisional commander in Kandara, Wilson Kosgey, acknowledged that suicide cases had reached alarming proportions. This report recommended the use of rehabilitation centers for people with Lifetime Substance Use (Ndungu, 2020), Wilson Kosgey was one of the proponents of the rehab centers for people with Lifetime Substance Use, arguing that the rehab centers were better than isolation areas for the drug addicts. One of the major factors which links suicide and Lifetime Substance Use is intolerance. Citing a case of suicide in Riandegwa village, the police boss indicated that the victim was embarrassed of his medical condition and had a dispute with his wife before committing suicide (Ndunge, 2020, para. 4). Rejection also plays a major role in suicidal ideation as indicated by Sgt Moses Kimenchu (Okello &Aomo, 2021). People in the country who face rejection from family members and the society in general for various reasons, resort to uptake of drugs that lead to suicidal thoughts.

1.3 Problem Statement

Alcohol and drug abuse have infiltrated the Kenyan society, affecting both young people and adults. NACADA (2012) indicates that Lifetime Substance Use is a major social and public health concern. Half of the people who use drugs are between ages 16 and 28 years. This age bracket represents the college and university population in Kenya. The estimates by UNDOC (2012) show that 60 percent of the drug users in Kenya reside in urban areas and 21 percent live in rural areas. Therefore, the best place to investigate Lifetime Substance Use and suicide ideation is the urban population. One of the major challenges encountered by bodies such as NACADA in addressing Lifetime Substance Use is the lack of awareness among university students. Understanding the prevalence of Lifetime Substance Use involves exploring a myriad of associated factors such as peer pressure, technological, socioeconomic, socio-demographic factors, and policy implementation issues. More importantly, awareness creation should involve the exploration of the effects of Lifetime Substance Use. One such effect is suicidal ideation. According to an annual report by WHO (2019), one person dies by suicide every 40 seconds, despite improvement by many countries in the strategies to curb suicide. WHO director noted that every loss is a tragedy for family members, friends, and coworkers. But suicides, however, are avoidable. Many countries have adopted proven suicide prevention techniques into the education and public health system programs. Another report by WHO (2020) denoted that Suicide was the second biggest cause of death among young people aged 15 to 29, following traffic accidents. Suicide was the second leading cause of death in females (after maternal conditions) and the third highest cause of death in boys aged 15 to 19 years

Within universities in Kenya, there have been worrying statistics showing the increase in rates of suicide among students in schools. Suicide was the second biggest cause of death among young people aged 15 to 29, following traffic accidents. Suicide was the second

leading cause of death in females (after maternal conditions) and the third highest cause of death in boys aged between 15 to 19 years was suicide among students. In January of 2018 alone, at least 12 students were reported to have committed suicide in Universities in Kenya (Wanzala 2018). Gitari (2020) studied the causes of suicide ideation and suicide among secondary school children. The research indicated that suicide has continuously been witnessed around the country with 90 percent of victims being adolescents and this is what led the researcher to brainstorm and research on this phenomenon. The research focused on what influenced these adolescents to want to take their own lives beginning from the ideation, the attempt and finally the death. These worrying trends are highly influential in the education and health stakeholders' work as they seek to address the problems. This study consequently seeks to address this problem by determining the Prevalence suicidal ideation among University Students with Lifetime Substance Use in Universities in Kilifi County.

CHAPTER 2 LITERATURE REVIEW

2.1 Empirical Review

The existing research showed approximately four clear possible relationships between suicide ideation and Lifetime Substance Use. One of the relationships involves the increased risk of suicidal ideation caused by Lifetime Substance Use. Lifetime Substance Use induced depressed feelings, reduced ability to solve problems, decreased ability to conduct cognitive processing, and negative effects on relationships, school, and occupational performance. Every Substance Use such as lifetime use of inhalant, cocaine, marijuana, heroin, methamphetamine, ecstasy, alcohol, steroid, and regular smoking was associated with increased odds of developing suicidal thoughts (Wong et al., 2013).

In a longitudinal study, 976 high school students in grade 10 and 12 in Canada were followed up. The study found out that the use of illicit substances together with marijuana or in isolation was associated with suicidal ideation. A peculiar pattern emerged for marijuana users whose use of marijuana alone did not cause suicidal ideation (Rasic et al., 2013). This type of longitudinal association was a peculiar tendency and showed the need for thorough research. Most of the existing studies did not report any significant longitudinal associations even after adjusting for confounders. A research on Lifetime Substance Use required contextual details to be observed to make it comparable to studies that existed. For example, the selection of the control variables, measurement of Lifetime Substance Use, and cultural context of the sampled population could cause a variation in findings from one study to another.

Another type of relationship examined by several studies was that suicidal ideation could increase the risk of substance use. People who regularly thought about suicide could resort to using substances as a way of escaping the reality (Bronisch et al., 2008). Substance

use could also aid such people in avoiding the suicidal thoughts. There was a wide gap in research regarding the prior suicide ideation and its relationship to later Substance Use.

The second type of association between suicide ideation and Lifetime Substance Use was a bidirectional one. Suicide ideation and Lifetime Substance Use could sometimes have a direct effect on one another. Van Ours et al., (2013) found that Lifetime Substance Use was useful when predicting but like most of the previous studies, they failed to find a reverse relation. This research found that Marijuana usage for several times a week increased the possibility of suicide ideation for male users but, the study did not associate suicide ideation with the uptake of marijuana use. The same case applied for studies on non-dependent regular smoking (Bronisch et al., 2008) and nicotine dependence (Pedersen & vin Soest 2008). These studies found that cigarette use was associated with suicidal ideation but early suicidal ideation had no association with the initiation of smoking later on in the persons lives. The above studies assumed the outcome to be the first sign of Lifetime Substance Use and suicidal ideation. There was need for research that did not have a limit on the outcome examined, either for initiation of Lifetime Substance Use or suicidal ideation. An ideal study examining this reverse relationship should have used a non-recursive model that has feedback loops so that it specifies the two sets of variables as effects and causes of one another concurrently. Kline (2013) recommended the use of the non-recursive model for examining the reciprocal associations between suicidal ideation and Lifetime Substance Use.

The relationship between Lifetime Substance Use and suicidal ideation may also take another shape. Common factors such as a person's impulse control can affect both Lifetime Substance Use and suicidal ideation. The current studies limit information regarding mechanism and directionality between Lifetime Substance Use and suicidal ideation.

2.2 Prevalence of Suicidal Ideation

2.2.1 Prevalence of Suicidal Ideation among University Students around the Globe

One of the worst hit regions is the United Kingdom whose student population experienced a sharp increase in suicide cases over the past decade. Megraoui (2018) indicated that 1330 deaths were caused by suicide in Wales and England in the past 10 years. Out of these deaths, 83 percent (1109) were students who were in their undergraduate level at universities in the country. The postgraduate students who died within the same period were 221 which was 17%of all the suicide deaths in that decade. The Office of National Statistics (ONS) approximated that 95 percent of the students who died in the year leading up to 2017 died of suicide. This figure implied that one student died every four days in England and Wales due to suicide. Out of the 1330 deaths, a significant gender disparity was evident whereby 878(68%) were men and 452 (34%) were women.

In the summer of 2018, 11 students attending Bristol University committed suicide within a period of 18 months and half of these victims were male. In Oxford and Cambridge, the suicide epidemic caused the population to question the abilities of the universities to support students adequately when they suffer from mental health issues and Lifetime Substance Use. The media reported very few deaths yet parents of the deceased were asking for answers from these institutions. A BBC documentary titled “Real Stories: Student Suicide” revealed that a third of the students who committed suicide had reported feeling depressed and lonely while a nearly a half of them suffered from a mental condition which they failed to reveal to the university. Both of these facts may point towards a prevailing pattern regarding the lack of open communication between students and the universities (Belkis.M (2021, April))

2.2.2Prevalence of Suicidal Ideation among University Students in Africa

The study presented by Amare et al., (2018) examines the issue of suicide among students in Ethiopia. The country has numerous cases of suicide which go both unstudied and underreported. The aim of the study was to assess the pattern as well as the factors which are associated with suicide attempt and ideation for students in Dangila TownEthiopia. This study was a cross-sectional research conducted in a school population. The researcher used multivariable and bi-variable logistic regression to identify the issues related to ideation and attempt of suicide. With a 95 percent response rate, the research was inclusive of 573 out of 603 students. The mean age was 17.52 years while the minimum and maximum ages were 15 and 19 respectively. The prevalence of suicide ideation was 22.5 percent and that of suicide attempt was 16.2 percent. Suicide cases resulted from physical pain (AOR 4.25, 95% CI (1.77, 10.20)), school absenteeism (AOR 4.30, 95% CI (2.03, 9.10)), poor social support (AOR 5.58, 95% CI (2.25, 13.84)). This study was mostly based on teenagers, some of whom had no access to drugs such as alcohol. Therefore, the study found no association between suicide and alcohol use. The study concluded that at least one in five adolescents- students experiences suicidal thoughts and attempts suicide due to poor social support, school absenteeism, and physical abuse.

2.2.3Prevalence of Suicidal Ideation among University Students in Kenya

A study presented by Atellah (2019) shows that the cases of suicide have increased rapidly in the past ten years. This study indicates however that the numbers reported are not sufficient to make a case for national concern. The Kenyan situation was studied in details by Wanyoike (2015) using a combination of qualitative and quantitative methods of data analysis and collection. The researcher required to learn a great deal about the respondents' conditions to gauge their reactions due to the sensitivity of the suicide issue. Results showed

that on average,40 percent of suicide cases are caused by loneliness, depression, hopelessness, conflict, illness and social pressure.

Insights from a study by Gitari (2020) to investigate suicidal act causes among students in Secondary Schools in Inambang'ombe constituency in Chuka Tharakanithi County suggested that poor performance, sexual abuse, domestic violence, childhood abuse and physical abuse were the major causes of suicide with an average of 60 percent. The research indicated that suicide has continuously been witnessed around the country with 90 percent of victims being adolescents and this is what led the researcher to brainstorm and research on this phenomenon. The research focused on what influenced these adolescents to want to take their own lives beginning from the ideation, the attempt and finally the death (Gitari 2020). Various other researches similar to this, point towards the leading cause of adolescent deaths was suicide. However, these researches do not investigate the relationship between suicide ideation and drug abuse especially considering it is normally an underlying issue that surrounds all the causes given.

2.3 Prevalence of Lifetime Substance Use

2.3.1 Prevalence of Lifetime Substance Use around the Globe

A study by Arria et al., (2017) examines the incidence and prevalence of drug use among students in USA colleges. This study is motivated by the fact that Lifetime Substance Use among students in college is linked to antagonistic health and academic consequences. Continued use of medicinal drugs for nonmedical purposes appeared predominant during the college years compared to the years after college. Even though the pervasiveness of ecstasy and cocaine use was not high, the later years during the research portrayed occurrence of high rate of Lifetime Substance Use. The research consequently concluded that young college

students experienced substance dependence which progressed on even after they were done with college. Accordingly, the study recommended the diversion of resources to recognizing students who are at high risk of drug use and intervening to minimize the academic, safety, and health effects (Arria et al., 2017).

Yi et al (2017) conducted a study to determine the incidence and related aspects of illegal substance use among students at Universities within the ASEAN (Association of Southeast Asian Nations) community. Findings from this research indicated a wide prevalence of illicit drug use among students in universities in a 12-month period. The overall prevalence of Lifetime Substance Use across nine ASEAN countries was 46 percent of the entire student population in the universities. Highest prevalence rate was found among students emanating from lower income countries and low-income families accordingly. These results support the worldwide concern that Lifetime Substance Use is a noteworthy public health issue which calls for particular attention (Yi et al., 2017).

2.3.2Prevalence of Lifetime Substance Use in Africa

Kyei & Ramagoma (2013) examined the prevalence of Lifetime Substance Use among students in South African universities. Students resort to drugs and alcohol to treat depression, imitate people in their lives, relieve loneliness, and elevate self-esteem. This study indicated the absence of reliable data on Lifetime Substance Use in South Africa regarding the prevalence of drug use. Among the 209 students who were interviewed, 65 percent used alcohol while 49 percent of them do not abuse the drug. The study used Chi-square tests which showed that age, sex, religion, staying in campus, family monthly income, and peer pressure were among the main factors that affected the use of alcohol. The logistic

regression indicated that only peer pressure and religion are the main factors that affect alcohol use (Kyei & Ramagoma, 2013)

A research by Osman et al., (2016) shows the high risk of Lifetime Substance Use among young people in Sudan. Before the study, there was no study which examined the prevalence of Lifetime Substance Use except for tobacco among young people in Sudan. Therefore, the study sought to examine circumstances, factors causing suicide, and prevalence of suicide. Osman et al., (2016) conducted an institution-based survey on 500 students using a questionnaire designed by the World Health Organization. The data was analyzed using IBM SPSS version 20. The overall prevalence of drug use in Sudan for university students was 31 percent. The research recommended that the control of Lifetime Substance Use could uncover the role of the university and parents in providing education and observing students to improve their awareness of Lifetime Substance Use and the outcomes.

2.3.3Prevalence of Lifetime Substance Use in Kenya

Research presented by Atwoli et al., (2011) examined the issue of Lifetime Substance Use surrounding students in universities and colleges. The study predicted that Lifetime Substance Use in a student causes problems later in life. The study aimed at establishing the prevalence and factors which are connected with drug use among university and college students. The study used descriptive cross-sectional survey using the WHO Self-Administered Model Core Questionnaire. This study was conducted in the Eldoret Municipality using random sampling method. The researcher selected one university and three tertiary non-university institutes. The lifetime prevalence rate of Lifetime Substance Use was found to be 69.8 percent. None of the socio-demographic issues was suggestively linked to this high rate.

The lifetime prevalence rate was 51.9 percent for alcohol. 97.6 percent of the alcohol users had used alcohol within the past week leading to the study. The prevalence rate for cigarette use was 42.8 percent with the male participants being having statistically significant rates than the females ($p<0.05$). The use of other substances such as cannabis and cocaine were 2 and 0.6 percent respectively. Among the participants who admitted to using substances, 23.5 percent were introduced by relatives while 75.1 percent were introduced by friends. Most of the participants (62.2%) wanted to relax while others (60.8%) wanted to relieve stress. This study also indicated the increase in alcohol intake leading to quarrelling, loss or damage of property, parenting problems, unplanned and unprotected sex, medical problems, and fights. The prevalence of Lifetime Substance Use for university students in Eldoret is high and results in psychological and physical problems for this population. A huge proportion of the people using alcohol reported having serious adverse effects. This study deems it a necessity to create methods for intervention to reduce the risk of dependence on drugs and other adverse effects (Atwoli et al., 2011).

Findings from a study done by Ndetei et al (2009) to establish prevalence of Substance Use disorder among secondary school children noted a substantial percentage of male students aged roughly 17 years had used either alcohol or cigarette and in some cases both of them. The study established a 62 percent Lifetime Substance Use rate on male students and this according to the questionnaires began as early as 11 years.

There are very few studies which attempt to establish the relationship between Lifetime Substance Use and psychiatric disorders with suicidal tendencies from low-income nations like Kenya. Khasakhala et al., (2013) examines the relationship between co-existing psychiatric and Lifetime Substance Use with suicidal behavior among young people as well as alcohol use and depressive disorders in their parental figures. This research sampled 678 respondents who included 250 youths, 226 and 202 biological mothers and fathers

respectively. The study found an association between alcohol abuse ($p<0.001$), depressive ($p<0.001$), and Lifetime Substance Use ($p<0.001$) and suicidal behaviors for young people. Maternal depressive disorder was also significantly ($p<0.001$) suicidal thoughts among young people. Perceived maternal rejecting behavior was significantly ($p<0.001$) related to suicidal tendencies. These results also showed that young people between the age of 16 and 18 had higher suicidal behaviors than those below the age of 16 or those above 18 years ($p=0.004$). The results suggest that young people in Kenya who suffer from Lifetime Substance Use and psychiatric disorders have their mothers living with one or more depressive disorders. Perceived maternal rejecting behavior in parenting is a major cause of suicidal behavior among young people.

Musyoki et al. 2020, assessed Alcohol and substance use among first year students in the University of Nairobi and found that Lifetime and current alcohol and substance use prevalence were 103 (25%) and 83 (20%) respectively. Currently frequently used substances were alcohol 69 (22%), cannabis 33 (8%) and tobacco 28 (7%). This depicts a representation of most of the institutions in Kenya, with a conclusion that a quarter of the study respondents consumed alcohol and/or substances at the entry to university pushing the case for early intervention strategies to delay initiation of alcohol and substance use and to reduce the associated harmful consequences.

2.4 Global Trends of Suicide Ideation and Lifetime Substance Use

A study by Peltzer & Pengpid (2015) to examine the correlations between suicide ideation and Lifetime Substance Use along with suicide attempts among school-aged adolescents in Oceania on four Pacific countries indicated a 35 percent prevalence of suicidal ideation and 34 percent suicide attempts among the sampled students within the four

countries. Suicidal behavior in this context was reported to be higher in this research as compared to previous researches about the same issue in United States territories in Philippines and China due to lifetime substance use. There have been several studies indicating an upsurge in suicidal behavior in especially among the youth in territories of countries in the Pacific Island. Peltezer and Pengpid in their study consequently try hypothesizing the main reason for suicidal behavior increase and the effects of swift social changes especially the rapid change from community and village based to a nuclear kind of family socialization of youths and adolescents. This according to Peltzer & Pengpid(2015) leads to indirect and direct suicide ideation, recurring mental disorders and intergenerational conflicts from Lifetime Substance Use. Several previous studies established that suicide attempters who were young were suggestively more likely to have Lifetime Substance Use as compared to non-attempters. Accordingly, relevant governing bodies should consider early intervention and prevention activities along with simultaneous early initiation of drug use prevention which will come a long way in reducing and preventing suicidal behavior at a later stage.

Borges et al., (2017) examined the growth of suicide ideation, attempt and plan in young adults in the metropolitan area of Mexico City and concluded that between 2001 and 2013, there was a considerate increase in suicide ideation and attempts and this was partially related to Lifetime Substance Use as WHO (2013) report on mental Health Action reported. Results from this research coupled with the ever-increasing rates of suicide in Mexico draws a scenario of neglected youth and young adults and calls for urgent measures especially following the recent WHO guidelines regarding the prevention of suicide among young people (WHO, 2013)

2.4.1 Regional Trends of Suicide Ideation and Lifetime Substance Use

A study by Goldstone et al (2020) that was aimed at describing substance use patterns for non-fatal suicidal behavior patients in South Africa declared that patients with suicidal behavior exhibited Lifetime Substance Use as compared to those without suicidal behavior. This study established a direct link between Lifetime Substance Use and suicidal behavior. More than 60 % of patients who has Lifetime Substance Use were found to exhibit suicidal traits as compared to 28 percent in the other group according to this study.

Goldstone denotes that Lifetime Substance Use is a well-established risk factor for people exhibiting both non-fatal and fatal suicidal behavior. In essence, substance use is an independent risk factor for an individual developing suicidal ideation which will eventually lead to suicide. While research investigating suicidal ideation and Lifetime Substance Uses are scarce in middle- and low-income countries, evidence from the little research clearly points towards suicidal ideation and Lifetime Substance Use are consistently associated.

2.4.2 Local Trends of Suicide Ideation and Lifetime Substance Use

Wanyoike (2015) also highlighted substance and alcohol abuse as a major cause of suicide. In his study, he identified alcohol and Lifetime Substance Use as one of the biggest vices found in the university compounds. Alcohol is not illegal but the manner in which it is consumed within institutions is a worrying factor. Other drugs were difficult to access, especially the illegal ones. The study established that people with alcohol dependence and attempted suicide had moods characterized by depressive episodes, particularly interpersonal difficulties, living alone, poor social support, and high impulsivity/aggression. The use of drugs and alcohol is considered as one of the major causes of suicidal behavior in students in Kenyan universities. Drug use alone did not explain the need to break away from academic pressure. Students tended to use alcohol and drugs to release the pressure from their learning

experience. The use of alcohol was also identified as a major cause of suicide. Alcohol usage was also a major symptom of suicide behavior (Wanyoike, 2015).

Kiriru (2018) assessed the level of substance use awareness in selected private universities in Kenya with a conclusion that awareness reduced incidences of drug and substance abuse among the undergraduate students in the private University.

2.5 Theoretical Framework

2.5.1 The Three-Step Theory of Suicide

This theory describes Klonsky & May (2015)'s view of the suicide theory positioned in the ideation-to-action framework. The theory is an explanation of the way suicidal ideation develops and progresses to attempts. The theory is thereby relatively parsimonious since suicidal ideation and attempts are elaborated in terms of factors such as connectedness, suicide capacity, hopelessness, and pain.

The first step is the development of suicidal ideation. People are shaped by the way their behaviors condition them. A person adopts behaviors which are rewarded and they often avoid the behaviors which are punished. If a person's day-to-day experience of life is painful, the person is being punished for being alive. Therefore, the pain decreases the desire to live and ends up initiating the thoughts of suicide. Therefore, the first step towards suicide ideation begins with pain and hopelessness regardless of the causative factor. A combination of pain and hopelessness thereby causes the development of suicide ideation.

A second step involving connectedness propels a person further towards potentially suicidal tendencies as Dhingra et al., (2019) dictates that connectedness refers to a person's link to other people. The term may be used in a broader context to refer to a person's connection to an interest, role, project or job. The term may also refer to a person's perceived

sense of meaning and purpose which keeps them invested in living. A perfect example is the case of a parent who goes through pain and hopelessness on a daily basis but is deeply invested and connected to his or her children. If the connectedness to children exceeds the pain and hopelessness, the parent may have passive suicide ideation but will not progress to the active desire to commit suicide. Consequently, this theory emphasizes on the combination of pain, hopelessness, and connectedness as an explanation for suicidal ideation as opposed to suggesting that other conventional risk factors are irrelevant (Dhingra et al., 2019).

The final step in this theory is the progression from mere ideation into attempts. A person develops the desire to commit suicide and progresses into a stage whereby they decide whether to proceed or not. People are evolutionally and biologically programmed to avoid pain, death, and injury. This form of instinctive need to preserve oneself is one of the major hindrances to suicidal attempts. One of the terms that stand out when explaining this three-step model is “acquired capability.” A person exposed to life experiences like combat training, physical abuse, non-suicidal self-injury, or suicide of a close relative or acquaintance develops a habituation to pain referred to as acquired capability (Klonsky & May 2015). Acquired capability s the result of habituation to incidences which are painful, infuriating, fear-inducing, or death itself. This habituation to the experiences can lead to high capacity for suicide. The third attribute is practical capacity for suicide (Tatz 2019). In conclusion, the disposition, acquired, and practical variables are the main contributors of suicide capacity which will lead a person with suicide ideation to attempt to commit suicide (Ivey-Stephenson et al., 2020).

2.5.2. Social Learning Theory

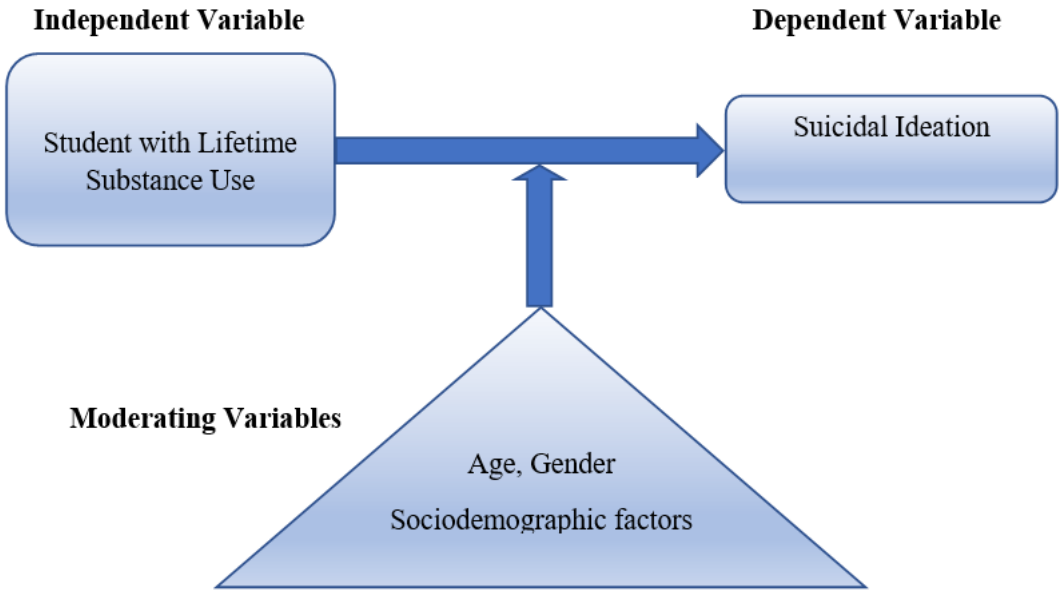
The Social Learning Theory postulates that learning takes place in a social framework with an ever-changing and shared interaction between the person, environment and behavior. Our observations of other individuals participating in addictive behavior, according to social learning theory, can lead to the development of addiction. We may want to repeat what we see when we see the behavior and responses of those who use addictive substances (or activities). Recovery consists of learning new ways to cope with stress. This might include developing friendships with people who do not use addictive substances. By associating with people who enjoy life without alcohol or drugs, we observe and learn something new. Recovery might also include watching a friend, coach, sponsor, or therapist modeling healthy behavior. We could then begin practicing these behaviors (Horvath et al. 2016).

Classic conditioning is a method of learning addictive behavior that involves coupling the pleasure of addictive substances or activities with environmental cues. Assume someone smokes marijuana in their automobile every night after work. The pleasure of consuming marijuana is linked to the pleasure of driving in an automobile. A matched association is likewise formed by the timeframe "after work."(Tom et al. 2016).

According to Atwoli et al (2011) the prevalence of substance use among college and university students in Eldoret is high and causes significant physical and psychosocial problems in this population, the substance use being in correlates of peer influence and avoidance of responsibilities and challenges in school.

Substance use being studied in this study is hereby based on social Learning Theory with assumption that substance users are significantly in correlate with their social setting

2.6 Conceptual Framework



We theorized that there is a direct link between suicidal ideation and Lifetime Substance Use. In this matter, a student in either of the two universities with Lifetime Substance Use which is the independent variable is assumed to be having or not having suicide ideation which is the dependent variable. Age, gender and socio-demographic factors are confounding variables and subsequently affect the relationship between Lifetime Substance Use and suicidal ideations. Accordingly, the prevalence of either Lifetime Substance Use or suicidal ideation depends largely on these moderating variables.

2.8 Study Objectives

2.8.1 Broad Objective

To determine the prevalence of suicidal ideations among students with Lifetime Substance U se in Universities in KILIFI County.

2.8.2 Specific Objectives:

1. To identify the socio-demographic characteristics of University students with lifetime substance use and suicidal ideation in Kilifi County.

2. To determine the prevalence of Lifetime Substance Use and suicidal ideation among students in universities in Kilifi County.

3. To determine the association between lifetime substance use and Suicidal ideation among students in universities in Kilifi County.

2.9 Study Justification.

Contemporary research suggests that there is increasing global mortality rate for Lifetime Substance Use and suicide related causes. WHO (2019) estimates that more than 30 million people are suffering from Substance Use disorder around the globe. Research points towards individuals with lifetime substance use reporting more suicide ideation and attempts as compared to those who do not use any drugs. Research on Lifetime Substance Use and its role in individuals developing suicidal ideation especially among university students is scarce. There are no suicide prevention programs that target the reduction of Lifetime Substance Use which may protect individuals from developing suicide ideation (Arria et al., 2009).This calls for intensive social intervention programs to be designed by the relevant

stakeholders in the education sector to curb both suicide and Lifetime Substance Use and this subsequently calls for further research on this phenomenon in public universities as well especially because research on Lifetime Substance Use and suicide in Universities in Kenya is either scarce or non-existent.

Results from this research will be vital to universities around the country in both the recognition of underlying suicide ideation and Lifetime Substance Use patterns and in the formulation of new strategies to curb both suicide ideation and Lifetime Substance Use.

2.10 Study Significance

This study aimed at establishing the patterns of suicide ideation and the extent of Lifetime Substance Use among university students in Kilifi County. In this light, Hopefully,University administrations in both the selected schools and countrywide will be motivated to formulate new strategies to curb Lifetime Substance Use and suicide ideation within schools and this will prevent both the loss of life through suicide and the ruining of life through the use of drugs. Accordingly, results from this research will avail University administrations with wide ranging information on the prevalence and rates of both suicide ideation and attempts and Lifetime Substance Use in the absorption and development of appropriate strategies and policies to reduce death by both.

2.11 Null Hypothesis

The null hypothesis for this research assumed that university students from both universities with lifetime substance use were more likely to have suicidal ideations as compared to students without lifetime substance use

CHAPTER THREE: METHODOLOGY

3.1 Study Design

This study was a cross-sectional study design. The research examined the patterns of suicide ideation as well as the factors which indicate its prevalence in the target population. The research similarly examined people's involvement, rapid and unpredictable change in habits all of which are related to Lifetime Substance Use. The research also examined the indicators of suicide ideation for the sampled population. Some of the issues associated with suicide ideation included openly talking about suicide, and increased drug and alcohol use.

An alteration of a person's normal routine including attributes such as sleeping and eating patterns also signals suicide ideation. Other considerations include mood swings, feeling trapped in a single situation, pursuing self-destructive behaviors, giving away belongs or preparing one's affairs with a hint of finality, saying goodbye to people as if it is the last time, and developing changes of personality (Czeisler et al., 2020). This study examined the connection between the aforementioned indicators of suicide ideation and Lifetime Substance Use.

3.2 Study Area Description

This study examined the students from Pwani University and Mount Kenya University Malindi campus. Pwani University is in Kilifi, a town that is 60 kilometers of Mombasa city. This institution had the following schools; School of Pure and Applied Sciences, School of Education, School of Humanities and Social Sciences, School of Agriculture and Environmental Science and that made it suitable for such a research due to the complexity of students it had.

Mount Kenya University is a Private University which has several learning outlets Malindi Campus being one of them. The main courses offered include; Business

Management, Human Resource Management, Public Relations, Supplies and Procurement, Criminology and Community Development. Currently, they only offer online courses due to the Pandemic. Moreover, both Universities offer certificate, diploma, undergraduate, and post-graduate courses and the student population is composed of subjects under any one of these programs and this formed a strong basis for the research since other universities in the coastal region only offer a few of the above-mentioned courses.

3.3 Study Population

The study aimed to identify the prevalence of suicidal ideations among students with lifetime substance use in universities in Kilifi County in Kenya**.** The study population comprised of 63 students from Mount Kenya University Malindi Campus and 321 students from Pwani University. The researcher recruited participants from the two universities as outlined below in the inclusion and exclusion criteria.

Inclusion criteria:

- Must have been 18 years of age, or more, as at the time of the study
- Must have been exposed to substance use as at the time of the study
- Students who submitted a duly signed consent for participating in the study

Exclusion criteria:

- University students other than those from Mount Kenya and Pwani universities.
- Students whose name did not exist on the list of students obtained from the various departments.
- Students whom the researcher was unable to contact despite being randomly selected from the list of students.

3.4 Sample Size

The sample size was arrived at by determining eligible respondents who will be found based on the inclusion and exclusion criteria. The study's sample size is calculated using a method designed by Fisher in 2002 given as:

$$n = \frac{Z^2 PQ}{d^2}$$

Z^2– Equivalent confidence level value (1.96 for 95% confidence)

d -Error margin accommodated by the research (i.e. 0.05 = - or +5%)

p – Proportion rate projected from the sample with the interest in the study p was 0.5%

q = (1-p) standardized – 1.0-p =0.5

The sample size per the universities being determined based on proportional allocation.

3.5 Determination of Sample Size

Based on Fisher's formula:

$$n = \frac{Z^2 PQ}{d^2}$$

$$n = \frac{1.96^2 \; x \; 0.5 \; x \; 0.5}{0.05^2}$$

$$n = 384$$

Table 1: Computed sample size by University for stratified sampling

University	Population	Proportion	Sample size
MKU Malindi Campus	1560	0.163	63
Pwani University	8000	0.837	321
Total	9560	1.000	384

3.6 Sampling Procedure

The student population in MKU Malindi Campus was 1560 while Pwani University had 8000 students. A sample of 321 students from Pwani University which comprised of 7 different schools were randomly selected through proportionate sampling procedure. In this regard, A list of students' were obtained from the various departments, names were randomly selected from the list and the selected were contacted by the researcher who were then explained for the study and requested for consent. I repeated this process until the desired number of students was reached. A similar method was used to Sample the 63 respondents from MKU.

3.7 Recruitment Procedure

The researcher selected eligible respondents by obtaining consent from the university administration of both universities upon presentation of relevant documents for governing authorities. The researchers then selected students randomly and approached them to explain the study and requested for consent to administer the research tool. Those who agreed were screened for exclusion criteria and accordingly incorporated into the study after signing the

consent form. Those who do not give consent were thanked and excluded from the study. The researcher administered WHO Modified ASSIST to determine the respondent's prevalence of lifetime substance use. Those found without lifetime substance use were excluded while those found with lifetime substance use were served with the second research tool to determine suicide ideation.

3.8 Study Variables and Instruments

The study participants who filled up informed consent forms proceeded with this research. This study considered those who used drugs and those who did not. The study also considered the people who tested negative for variables indicating suicide ideation as well as those whose results show suicide ideation.

The dependent variable for the study was suicide ideation while student with lifetime substance use disorder was the independent variable. The moderating variables were age, gender, social support and socioeconomic status. Those factors were essential in evaluating the pattern of Lifetime Substance Use and suicidal ideation. The following instruments were essential in the analysis of the above factors:

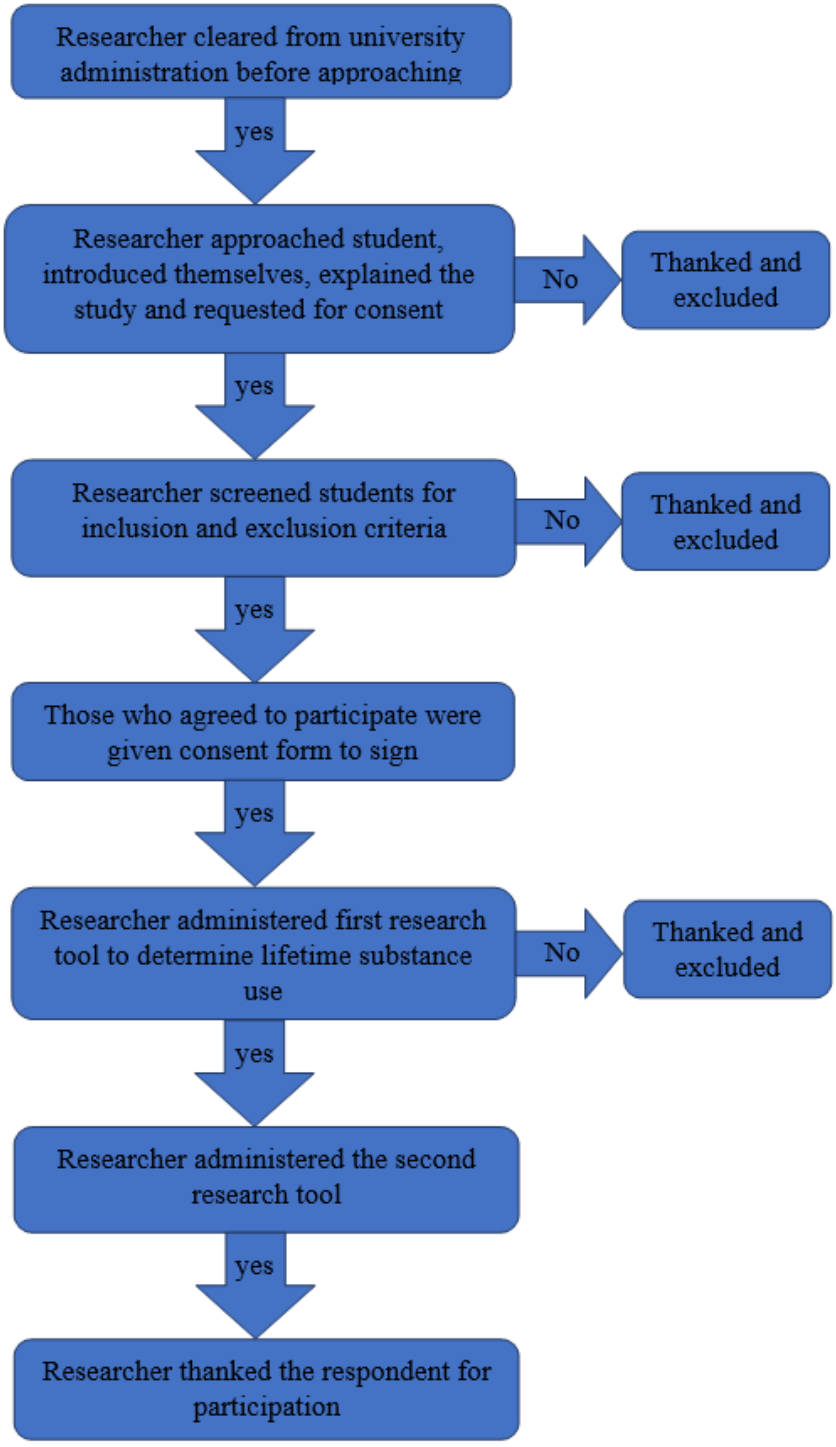
- Alcohol Smoking and Substance Involvement Screening Test (ASSIST)
- SBQ-R Suicide Behaviors Questionnaire – Revised

3.9 Data Collection Procedures

The research subjects were recruited from the two universities through random selection, explanation of the study and requesting of the consent. Students who responded to the invitation and gave consent were screened against factors indicated in the inclusion criteria

after which consent form was filled then the first research tool administered. Data was collected using 2 questionnaires (WHO MODIFIED ASSIST and SBQ-R) which are derivatives of the tools mentioned above beginning with ASSIST. Those who were found to have lifetime substance use progressed on to the second tool to determine suicidal ideation and those who will not have it will be excluded from the study.

3.10 Recruitment and Data Collection Flowchart



3.11 Quality Assurance Procedures

This study involved the use of human subjects. Although this study was a non-experimental procedure, the use of human subjects during a medical study is a sensitive issue. Therefore, the researcher ensured to observe the necessary laws and processes involved in the acquisition of data and its use for human studies. The study observed privacy concerns and ethics associated with disclosure of personal information.

The researcher used double entry in the data entry process to reduce the possibility of errors. All questionnaires were evaluated at the end of the study for their completeness and validity of information offered by respondents.

3.12 Reliability and Validity of the Research

The degree to which the research results could alter if the study was repeated under the same conditions but over a different time period is referred to as reliability. The researcher looked at prior questionnaires filled out by the same study populations in past studies to see if the data supplied was consistent. The researcher asked the identical questions to each respondent to establish uniformity and seek guidance if there was any contradiction. The amount to which the results of a study actually measured the specified variables is known as validity. The researcher analyzed results that were consistent with established ideas on suicidal ideation and lifetime substance use in this study. To acquire trustworthy and valid data, the researcher used a precise and unambiguous questionnaire with direct and straight forward questions.

3.13 Data management

This study used various computer programs to analyze the collected data. One such tool is the Microsoft Excel where data will be entered systematically after which SPSS software version 24.0 was be used for analysis and storage purposes. All the sensitive materials including the filled questionnaires were stored in a secured cabinet which ensured that there were no leakages of the information.

3.14 Data Analysis Tools

Suicidal ideation and Lifetime Substance Use as the variables in this research calls for a logit model. In this regard, RStudio Version 2021.09.2 Build 382 for windows was used for analyzing the data as it was the best choice for social and medical science fields. Once data collection was done, data analysis commenced to establish the proportion of university students with suicidal ideation which was then presented in percentage form. Data that was collected was also analyzed to identify the prevalence of lifetime substance use and its incidence which was then presented in percentage form. Bivariate logistic regression was used to estimate the associations with sociodemographic factors. Multivariate logistic regression was used to adjust for the effects of socio-demographics to yield adjusted odds ratio.

3.15 Ethical Considerations

Before embarking on this study, the researcher got approval from the Kenyatta National Hospital and University of Nairobi Ethics and Research Committee (KNH-UON ERC), Pwani University and MKU Malindi campus in Kilifi County. The researcher consulted with the relevant governing bodies in these universities in Kilifi County. This was

done to guarantee the maintenance of high ethical standards and also ensure there was adequate obligatory support that was needed to produce noteworthy results from the study.

The researcher got informed consent from all respondents before being incorporated into the study. The participants were at will to terminate the study any time they felt uncomfortable. There were no financial gains from the study and respondent information were regarded with high confidentiality and used solely for the purpose of the research. The questionnaires did not bear the names of respondents and the completed questionnaires were kept safely under lock and key. Additionally, data on computers were secured by passwords to prevent unauthorized access.

Similarly, considering suicide is an extremely sensitive subject, the researcher upheld strict psychological distress and maintained a good rapport and positive attitude between the data and the interviewee while also assuming the role of a counsellor during the interviews. The researcher treated emotional response from respondents with utmost significance and gravity so they felt safe to give the required information to ensure that their autonomy was assured.

This study added outstanding and wide ranging information to the existing knowledge on suicide ideation and lifetime substance use and in this light, University administrations in both the selected schools and countrywide were motivated to formulate new strategies to curb Lifetime Substance Use and suicide ideation within schools and this will prevent both the loss of life through suicide and the ruining of life through the use of drugs.

3.16 Potential Risks of the Research

This was a pen and paper study as it does not involve any physical or invasive procedures. However, some questions may have evoked some uncomfortable emotions and this may have invaded the students' privacy. For those who got overwhelmed emotionally were to be referred to the University administration for further management and counseling but luckily, I never got a subject who required any psychological first aid.

Chapter 4: Results

4.1 Socio-demographic Characteristics of the Study Population

A total of 335 students sampled among first, second, third and fourth years participated in the study. First years were represented by 71 students (21.1%); 73 in second year (21.8%); 95 in third year (28.4%) and 96 in fourth year (28.7%). Female students were 139 (41.5%) in number against 196 (58.5%) male students. A total of 104 students were aged between 16 and 21 years (30.1%), 184 (54.9%) between 21 and 28 years and 50 (14.9%) above 28 years of age. Two hundred and fifty-six students (76.4%) were of Christian faith while 58 (17.3%) were Muslims. The remaining 21 (6.3%) were in other religions. Fourty-four (13.1%) students were married while 291 were either single or had divorced their partners (86.9%). A total of 160 (48.4%) students acknowledged that they needed to complete their studies while 153 (45.7%) admitted to the need for professional assistance. Table 2 below summarizes this information.

Table 2: Sociodemographic Characteristics of Study Population

Sociodemographic Characteristic	n=335 (%)
Year of Study	
1st Year	71 (21.2)
2nd Year	73 (21.8)
3rd Year	95 (28.4)
4th Year	96 (28.7)
Gender	
Female	139 (41.5)
Male	196 (58.5)
Age	
16 – 21	104 (30.1)
21 – 28	184 (54.9)
Above 28	50 (14.9)
Religion	
Christian	256 (76.4)
Muslim	58 (17.3)
Others	21 (6.3)
Marital Status	
Married	44 (13.1)
Single/ Divorced	291 (86.9)
Need of help to complete study	
No	171 (51.7)
Yes	160 (48.4)
Need professional assistance	
No	182 (54.3)
Yes	153 (45.7)
Ever attempted suicide or had suicidal thoughts	
No	194 (57.9)
Yes	141 (42.1)
Ever told someone of your intention to commit suicide	
No	256 (76.4)
Yes	79 (23.6)
Chances of attempting suicide someday	
No	247 (73.7)
Yes	88 (26.3)

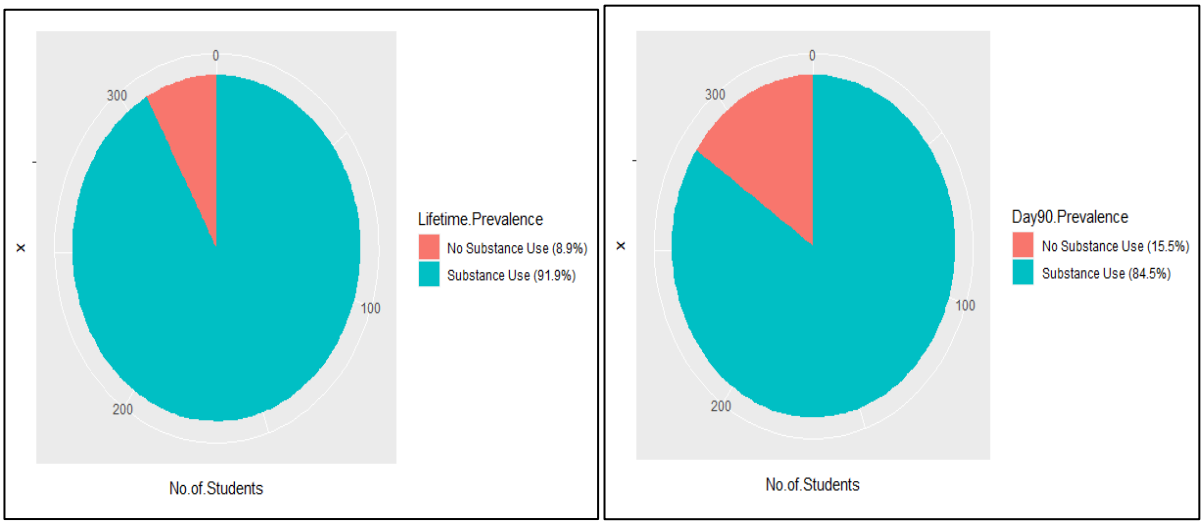
4.2 Prevalence of Suicide Ideation and Attempts

A total of 141 (42.1%) students had either had suicidal thoughts or attempted suicide in the past. This translated to 42.1%. Seventy-nine 79 (23.6%) students reported that they had- at least once in their lifetime- informed someone of their intention to commit suicide. Furthermore, 88 students acknowledged that there was a chance that they may attempt suicide someday in future. This accounted for 26.3% of the study population. Table 2 above summarizes this information.

4.3 Overall Prevalence of Lifetime and Ninety-Days Substance Use

Out of 335 students who participated in the study, 308 students had taken at least one substance in their lifetime hence a lifetime prevalence of substance-use of 91.9%. A total of 283 students had used at least one substance within 90 days leading to this study hence a 90-day prevalence of substance-use of 84.5%. The pie-charts below depict this information.

Pie Charts of Lifetime and Ninety-Day Substance Use Prevalence



4.4 Lifetime and Ninety-Day Prevalence of Specific Substance-Use

Alcohol was the most prevalent substance among the study participants. It had a lifetime prevalence of 78.8% (n = 264). This was followed by tobacco products at 48.4% (n = 162) and cannabis at 41.3% (n = 138). Inhalants, Cocaine and hallucinogens had the least lifetime prevalence of 18.5%, 17.9% and 15.8% in that order (n = 62, 60 and 53 respectively). Within 90 days to the onset of this study, a total of 231 participants had used alcohol; 135 had taken tobacco and 98 had taken cannabis at least once. This translated to a prevalence of 69.0%, 40.3% and 29.3% respectively. Like in the assessment of lifetime prevalence, the three substances had the highest 90-day prevalence of use among participants. The three least prevalent substances - within 90 days leading to this study - were inhalants (11.1%, n = 37), opioids (9.9%, n = 33) and hallucinogens (6.9%, n =23). Table 3 below summarizes this information.

Table 3: Percentage Frequency of the Risk Level to Specific Substances

Specific Substance Use	Lifetime Prevalence n (%)	90- Day Prevalence n (%)
Alcoholic beverages (beer, wine, spirits, etc.)	264 (78.8)	231 (69.0)
Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	162 (48.4)	135 (40.3)
Cannabis (marijuana, pot, grass, hash, etc.)	138 (41.2)	98 (29.3)
Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol,etc.)	81 (24.2)	54 (16.2)
Opioids (heroin, morphine, methadone, codeine, etc.)	68 (20.3)	33 (9.9)
Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	65 (19.4)	48 (14.3)
Inhalants (nitrous, glue, petrol, paint thinner, etc.)	62 (18.5)	37 (11.1)
Cocaine (coke, crack, etc.)	60 (17.9)	44 (13.1)
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	53 (15.8)	23 (6.9)

4.5 Association between Lifetime Substance Use with Suicide Ideation and Socio-Demographics

Bivariate assessment of the students' characteristics against lifetime substance use revealed a significant association between the need of the student to have professional assistance and lifetime substance use (OR = 2.57, p = 0.037). The odds of lifetime substance use by students who reported that they needed professional advice was 2.57 times that of those who reported otherwise. Students who acknowledged that they had the need for professional advice were more likely to have used substance in their lifetime as compared to those who did not see the need.

There was also a significant association between lifetime substance use and the students' history as pertains to whether he had ever attempted to commit suicide; or ever had the thoughts of killing himself (OR = 4.61, p = 0.005). Students who admitted to having had suicidal thoughts were more likely to have used substances in their lifetime compared to those who had never had suicidal thoughts.

The association between lifetime substance use and year of study, gender, age, religion, marital status, need for help to complete studies, ever told someone of an intention to commit suicide and chances of attempting suicide someday in future.

The final multivariate model for the association between lifetime substance use, suicide ideation and attempt; together with other possible predictors was fitted to the data. The model featured need for help to complete studies, need for professional assistance, ever told someone of an intention to commit suicide and chances of attempting suicide in future as independent variables. It had an AIC value of 174.4. Of all the variables mentioned, lifetime substance use was significantly associated with a student having attempted suicide in the past (OR = 3.79, p = 0.044). Students who had experienced suicidal thoughts or attempted suicide

in the past were more likely to have used substance in their lifetime compared to the students who had never had such thoughts or attempts. Table 4 below summarizes this information.

Table 4: Association between Lifetime Substance-Use with Suicide Ideation and Socio-Demographics

Sociodemographic Characteristic	Substance Use		Crude OR (0.95 CI)	P-Val	Adjusted OR (0.95 CI)	P-Val
	No n=27 (%)	Yes n=308(%)				
Suicide Attempt (Past)						
No	23 (85.2)	171 (55.5)	Ref	Ref	Ref	Ref
Yes	4 (14.8)	137 (44.5)	4.61 (1.72,15.9)	0.005	3.79 (1.19,17.4)	0.044
Suicide Intention (Narrate)						
No	25 (92.6)	231 (75.0)	Ref	Ref	Ref	Ref
Yes	2 (7.4)	77 (25.0)	1.17 (1.20,26.1)	0.055	3.39 (0.57,64.9)	0.264
Suicide Attempt (Someday)						
No	27 (100.0)	220 (71.4)				
Yes	0 (0.0)	88 (28.6)				
Year of Study						
1st Year	4 (14.8)	67 (21.8)	Ref	Ref		
2nd Year	6 (22.2)	67 (21.8)	0.67 (0.16,2.44)	0.544		
3rd Year	8 (29.6)	87 (28.2)	0.65 (0.17,2.15)	0.495		
4th Year	9 (33.3)	87 (28.2)	0.58 (0.15,1.85)	0.377		
Gender						
Female	13 (48.1)	126 (40.9)	Ref	Ref		
Male	14 (51.9)	182 (59.1)	1.34 (0.60,2.96)	0.465		
Age						
16 - 21	9 (33.3)	92 (29.9)	Ref	Ref		
22 - 28	13 (48.1)	171 (55.5)	1.29 (0.51,3.09)	0.577		
More than 28	5 (18.5)	45 (14.6)	0.88 (0.29,3.01)	0.828		
Religion						
Christian	21 (77.8)	235 (76.3)	Ref	Ref		
Muslim	5 (18.5)	53 (17.2)	0.95 (0.37,2.94)	0.917		
Others	1 (3.7)	20 (6.5)	1.79 (0.34,32.2)	0.580		
Marital Status						
Married	5 (18.5)	39 12.7)	Ref	Ref		
Not Married	22 (81.5)	269 (87.3)	1.57 (0.50,4.09)	0.319		
Help to Complete Studies						
No	17 (63.0)	154 (50.0)	Ref	Ref	Ref	Ref
Yes	9 (37.0)	151 (49.0)	1.85 (0.82,4.47)	0.015	1.05 (0.40,2.94)	0.920
Professional Assistance						
No	20 (74.1)	162 (52.6)	Ref	Ref	Ref	Ref
Yes	7 (25.9)	146 (47.4)	2.57 (1.10,6.72)	0.037	2.29 (0.79,7.35)	0.138

AIC Value for Final Multivariate Model = 174.4

4.6 Association between Ninety-Day Substance Use with Suicide Ideation and Socio-Demographics

Bivariate analysis between 90-days substance use and socio-demographic characteristics of the students revealed a non-significant association with year of study, gender ($p = 0.897$), age, religion and marital status ($p = 0.601$). The association between substance use and whether the student needed help to complete his/ her studies was also non-significant ($p = 0.475$). Moreover, the association between substance use and whether the student needed professional assistance was non-significant too ($p = 820$).

On the other hand, there was a significant association between ninety-days substance use and whether the students had ever had suicidal thoughts or attempted suicide in the past ($OR = 3.62$, $p < 0.001$). The odds of students who had ever had suicidal thoughts using substance within 90 days to the beginning of this study was 3.62 times that of students who had never had such thoughts. Students who had experienced suicidal thoughts or attempted suicide in the past were more likely to have used substance within 90 days before the study started.

There association between ninety-day substance use and whether a student had ever told anyone about his intention to commit suicide was also significant. The odds of substance use within 90 days to the study by students who had once informed another person about their intention to commit suicide was 3.33 times that of students who had never informed anyone. Students who had informed someone of their intentions to commit suicide were more likely to have used substance within 90 days to the onset of the study.

The likelihood of having suicidal thoughts or attempting suicide in future was significantly associated with ninety-day substance use. The odds of suicidal attempts by students who had used substance within 90 days to this study was 3.90 times that of students who did not admit to the existence of such a possibility. Students who admitted to the existence of a possibility

to attempt suicide someday were more likely to have used substance within 90-days prior to the onset of this study.

Multivariate logistic regression was used to adjust for the effects of other covariates. The final model had an AIC value of 276.3. It included year of study, need for help to complete study, having talked about one's intention to commit suicide and possibility of attempting suicide in future as independent variables.

Multivariate analysis returned a significant association between ninety-day substance use and whether the student had ever told someone about his intention to commit suicide. The odds were adjusted upwards to 3.41, $p = 0.032$ (from 3.33 in bivariate analysis). Having controlled for the effects of year of study and whether the students needed help to complete their study, students who had informed someone about their suicidal thoughts were more likely to have used a substance within 90-days to the study than students who had never informed anyone about such thoughts.

The association between ninety-day substance use and year of study also became significant in multivariate analysis. The odds of ninety-day substance use by students in their third year of study was significantly different from that of students in their first year of study (OR = 2.71, $p = 0.032$). Students in third year were more likely to have used substance within 90 days leading to this study. Ninety-day substance use among the students in second and fourth year of study was not significantly different from that of students in first year ($p = 0.250$ and 0.687 respectively).

Lastly, the association between substance use and suicide attempt was adjusted downwards from OR = 3.90 to OR = 3.04. The odds of students who admitted to a possibility of attempting suicide someday was 3.04 times that of students who believed there was no possibility of doing so ($p = 0.027$). The students who acknowledged the possibility of

attempted suicide someday in future were therefore more likely to have used substance within 90 days to the onset of this study than those who never thought it will ever happen. Table 5 below summarizes this information.

Table 5: Association between Ninety-Days Substance-Use with Suicide Ideation and Socio-Demographics

Sociodemographic Characteristic	Substance Use		Crude OR (0.95 CI)	P-Val	Adjusted OR (0.95 CI)	P-Val
	No n=52 (%)	Yes n=283(%)				
Suicide Attempt (Past)						
No	42 (80.8)	152 (43.7)	Ref	Ref		
Yes	10 (19.2)	131 (46.3)	3.62 (1.81,7.89)	<0.001		
Suicide Intention (Narrate)						
No	47 (90.4)	209 (73.9)	Ref	Ref	Ref	Ref
Yes	5 (9.6)	74 (26.1)	3.33 (1.39,9.87)	0.014	3.41 (1.27,11.9)	0.028
Suicide Attempt (Someday)						
No	47 (90.4)	200 (70.7)	Ref	Ref	Ref	Ref
Yes	5 (9.6)	83 (29.3)	3.90 (1.64,11.5)	0.005	3.04 (1.23,9.23)	0.027
Year of Study						
1st Year	15 (28.8)	56 (19.8)	Ref	Ref	Ref	Ref
2nd Year	10 (19.2)	63 (22.3)	0.69 (0.71,4.16)	0.242	1.70 (0.69,4.31)	0.250
3rd Year	10 (19.2)	85 (30.0)	2.27 (0.97,5.58)	0.063	2.71 (1.11,7.04)	0.032
4th Year	17 (32.7)	79 (27.9)	1.24 (0,57,2.70)	0.579	1.18 (0.52,2.66)	0.687
Gender						
Female	22 (42.3)	117 (41.3)	Ref	Ref		
Male	30 (57.7)	166 (58.7)	1.04 (0.57,1.89)	0.897		
Age						
16 - 21	18 (34.6)	83 (29.3)		Ref		
22 - 28	25 (48.1)	159 (56.2)	1.38 (0.70,2.66)	0.341		
More than 28	9 (117.3)	41 (14.5)	0.99 (0.42,2.48)	0.979		
Religion						
Christian	36 (69.2)	220 (77.7)	Ref	Ref		
Muslim	14 (27.0)	44 (15.5)	0.51 (0.26,1.06)	0.061		
Others	2 (3.8)	19 (6.7)	1.55 (0.43,10.0)	0.564		
Marital Status						
Married	8 (15.4)	36 (12.7)	Ref	Ref		
Not Married	44 (84.6)	247 (87.3)	1.25 (0.51,2.74)	0.601		
Help.Stud						
No	24 (46.2)	147 (51.9)	Ref	Ref	Ref	Ref
Yes	27 (51.9)	133 (47.0)	0.80 (0.44,1.46)	0.475	0.67 (0.35,1.26)	0.215
Professional Assistance						
No	29 (55.8)	153 (54.1)	Ref	Ref		
Yes	23 (44.2)	130 (45.9)	1.07 (0.59,1.96)	0.820		

AIC Value for Final Multivariate Model = 276.3

4.7 Specific Substance Involvement Scores

Classification of specific substance risk involvement showed that 166 (49.6%) students who took alcohol were at moderate risk while 69 (20.6%) were at high risk. Most students were at low risk of tobacco (n = 198, 59.1%), cannabis (n = 224, 66.9%), sedatives (n = 258, 77.0%), opioids (n = 277, 82.7%), amphetamine (n = 270, 80.6%), inhalants (n = 283, 84.5%), cocaine (n = 270, 80.6%) and hallucinogens (n = 285, 85.5%). Table 4 below summarizes this information.

Table 3: Specific Substance Involvement Scores

Specific Substance Use	Risk Level		
	Low, n (%)	**Moderate, n (%)**	**High, n(%)**
Alcoholic beverages (beer, wine, spirits, etc.)	100 (29.9)	166 (49.6)	69 (20.6)
Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	198 (59.1)	122 (36.4)	15 (4.5)
Cannabis (marijuana, pot, grass, hash, etc.)	224 (66.9)	93 (27.8)	5.4)
Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol,etc.)	258 (77.0)	67 (20.0)	10 (3.0)
Opioids (heroin, morphine, methadone, codeine, etc.)	277 (82.7)	55 (16.4)	3 (0.9)
Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	270 (80.6)	57 (17.0)	8 (2.4)
Inhalants (nitrous, glue, petrol, paint thinner, etc.)	283 (84.5)	47 (14.0)	5 (1.5)
Cocaine (coke, crack, etc.)	270 (80.6)	50 (14.9)	14 (4.5)
Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	285 (85.1)	46 (13.7)	4 (1.2)

Chapter 5: Discussion

Wong et. al., 2013 reported that every substance is associated with increased odds of developing suicidal thoughts. This finding resonated with the findings of this study; where a significant association between both lifetime and ninety-day substance use among students and suicide ideation and attempt was reported. A similar association was also reported by Rasic et. al., 2013 in a longitudinal study of 976 students in Canada. They reported a significant association between the use of substance- either alone or with marijuana- and suicide ideation. In Kilifi, students who had either attempted suicide or had experienced thoughts of doing so were also likely to have used substance either in their lifetime or within 90-days leading to the onset of this study.

Bronisch et. al, 2018 also reported similar findings to the one observed in Kilifi. They reported that suicide ideation could increase the risk of substance use. They also reported that substance use could aid people to avoid suicidal thoughts. This study confirmed the first finding but did not check the second one. The odds of substance use by students who had attempted suicide in the past was 3.62 times that of students who had never attempted suicide ($OR = 3.62$, $p < 0.001$). Substance use and suicide ideation therefore shared a positive correlation. Van Ours et. al., 2013 reported that marijuana use for several weeks increased the possibility of suicide ideation for males. While there was a significant association between substance use and suicide ideation in this study, the relation was not dependent on the gender of the student. The association with gender was non-significant ($p = 0.465$ for lifetime prevalence; $p = 0.897$ for ninety-day prevalence).

Megraoui (2018), through the Office of National Statistics reported that 95% of the students in the year leading to 2017 died of suicide; and with a big gender disparity (68% male; 32% female). The association with gender among students in Kilifi county was non-significant. Moreover, gender distribution was more balance in this study than in the study by Megraoui,

2018 (58.5% males and 41.5% females). Moreover, unlike the findings in Klifi, Belkis M (2021, April) reported that 11 students from Bristol University committed suicide within 8 months in 2018. Half of them were males. The study however never quantified the associations.

In Dangla Town in Ethiopia, Amare et. al., 2018 sought to assess the patterns as well as factors associated with suicide attempts and ideation. The 22.5% prevalence of suicide ideation that they reported was lower than the 42.1% that was reported as the prevalence for students who had thought of or attempted suicide in the past in this study. However, it closely approximated 23.6% that was reported as the prevalence of students who had informed other person of their intention to commit suicide. Amare et. al., 2018 also reported a prevalence of 16.2% for suicide attempt. This was much lower than 16.3% reported among students in Kilifi.

Gatari, 2020 failed to relate both suicide ideation and attempt to substance use in their study done in Inambang'ombe constituency, Chuka- Tharaka Nithi. This study confirmed the existence of a significant relation between the two parameters hence contradicting the findings by Gatari, 2020. The prevalence of 46% for lifetime substance use estimated by Yi et. al., 2009 in a study done on students in 9 Asian countries was almost half that of lifetime prevalence estimated in Kilifi (91.9%). It was also much lower than the 90-day overall prevalence of substance use in Kilifi (84.5%). The findings of both studies however pointed out to substance use as a worthy public health problem.

Kyei and Ramagoma (2013) estimated the prevalence of lifetime substance use among 209 students in South Africa. Alcohol had a prevalence of 65% compared to 78.8% among students in Kilifi county; while 49% had never used any form of substance in their lifetime compared to only 8.1% in Kilifi. Contrary to the findings in Kilifi, age, sex and religion were

all significantly associated with substance use in the study by Kyei and Ramagoma (2013). Osman et. al., 2016 estimated the overall prevalence at 31% from a sample of 500 students using a WHO adopted questionnaire in Sudan. This estimate was very low compared to the 91.9% lifetime prevalence observed in Kilifi county.

Atwoli et. al., 2011, in a descriptive cross sectional study in Eldoret, Kenya – reported a lifetime alcohol prevalence of 51.9% which was lower than 78.8% in Kilifi county; tobacco use at 42.8% compared to 48.4% in Kilifi county; cannabis at 2% compared to 29.3% in Kilifi county; and lastly cocaine 0.6% compared with 17.9% in Kilifi county.

Ndetei et. al., 2009 estimated a 62% lifetime substance use among male students while this study estimated a lifetime prevalence of 92.9% and a 90-day prevalence of 84.7% for the same group. In relation to age, Khasakhala et al., 2013 estimated that young people between 16-18 years had higher suicidal behavior than those above 18 years. In this study there was a significant association between substance use and suicide ideation and attempt but the association was not affected significantly by the age of the students. Musyoki et. al., 2020 reported a lifetime prevalence for alcohol use of 25% among first years; and current prevalence of 20% for the same group. This study estimated a higher alcohol lifetime and 90-day prevalence use of 94.3% and 79.9% respectively among first year students in Kilifi County.

Peltzer and Pengpid (2015) reported a 35% prevalence of suicide ideation and 34% prevalence for suicide attempts in a study in Oceania in four pacific countries. They also reported that the prevalence was higher than in USA territories, Phillipines and China. In Kilifi, 41.1% (141 students) admitted to have thought about suicide or attempted it in the past; 23.6% (79 students) had shared the thoughts of committing suicide with someone while 26.3% still thought that there was still a likely chance of committing suicide someday in

future. This points out to higher suicide attempts in Kilifi in the past and a slightly lower ideation than in the four Pacific countries.

Borges et. al., 2017 conducted a study in Mexico City between 2001 and 2003 and reported a notable increase in suicidal ideation which was partially related to lifetime substance use. The study in Kilifi returned similar findings despite being a cross-sectional study. There was a significant association between suicide ideation and attempt with substance use among college students in Kilifi.

Patients with suicidal behavior were more characterized by lifetime substance use compared to those who did not have suicidal behavior. This was reported by Goldstone et. al., 2020 in a study done in South Africa. They also reported substance risk as an independent factor for an individual developing suicidal behavior. Like in many other studies mentioned earlier, the findings resembled the patterns in Kilifi where a significant association between suicidal ideation and attempts with substance use was reported.

Lastly, the suicidal ideation and attempts in Kilifi closely compared with the findings of Wanyoike et. al., 2015 who reported alcohol and drug use as a major determinant of suicidal behavior among students in Kenya. Wanyoike et. al., further singled out alcohol usage as a major symptom of suicide behavior.

Chapter 6: Summary, Conclusion, Recommendation and Study Limitation

6.1 Summary

The lifetime prevalence for overall substance use among students was higher than the ninety-days prevalence in Kilifi county. Like in many other studies globally, this study confirmed the existence of a significant association between substance use among students and the occurrence of suicidal ideation and attempts. Students who had engaged in substance use in their lifetime or within ninety days leading to this study were more likely to have had suicidal thoughts and (or) attempts in the past. They were also more likely to experience suicidal thoughts and attempts someday in the future. The same trend still held for students who had shared their intention to commit suicide with someone. There was also a slight difference in the prevalence of substance use among third year students and that of first year students. Kilifi county generally recorded a higher lifetime and 90-days prevalence of substance use among students than in many studies both locally, in Africa and the whole world at large. At the level of specific substance use, alcohol, tobacco and cannabis had the highest lifetime and ninety-days prevalence among students in Kilifi county. Inhalants, cocaine and hallucinogens were the three-least prevalent substances in the lifetime of students in Kilifi county. Likewise, inhalants, opioids and hallucinogens were the least prevalent substances in the last ninety days leading to the onset of this study.

6.2 Conclusion

Alcohol, tobacco and cannabis were the most prevalent substances in the life of the students and within 90 days leading to this study. Unlike students in their fourth year of study, students in third year were also more likely to have used substance within 90 days leading to this study. Suicide ideation and attempts among university students in Pwani and Mount Kenya university in Kilifi County was significantly associated with substance use.

6.3 Recommendation

Larger studies that span across the whole of Kilifi county should be done to estimate the actual prevalence and possible risk factors of suicidal ideation and attempts among youths in the county; and their possible correlation with substance use.

Affected individuals should seek professional support to help in managing suicidal behavior. This includes seeking the services of a qualified therapists and licensed counselors.

More awareness on the harm and effects of substance use should be done within the universities to help in curbing down substance use among university students through relevant government authorities such as National Authority for the Campaign against Alcohol and Drug Abuse (NACADA).

Lastly, university authorities should initiate mentorship programs in schools as a mitigation against substance-use behavior university students.

6.4 Study Limitation

Findings from this study ought to be seen in light of a number of limitations which could be addressed in similar future research. Primarily, considering this research relied on self-reported data, the researcher relied on information given by students regardless of whether it was true or not. As such, the data was limited since it could not be verified independently. The respondents in this light may have chosen to withhold information, give wrong responses or even give conflicting feedback.

References

Amare, T., MeseretWoldeyhannes, S., Haile, K., &Yeneabat, T. (2018). Prevalence and Associated Factors of Suicide Ideation and Attempt among Adolescent High School Students in Dangila Town, Northwest Ethiopia. *Psychiatry Journal*, *2018*, 1–9. https://doi.org/10.1155/2018/7631453

Arria, A. M., Caldeira, K. M., Allen, H. K., Bugbee, B. A., Vincent, K. B., & O'Grady, K. E. (2017). Prevalence and incidence of drug use among college students: an 8-year longitudinal analysis. *The American Journal of Drug and Alcohol Abuse*, *43*(6), 711–718. https://doi.org/10.1080/00952990.2017.1310219

Atwoli, L., Mungla, P. A., Ndung'u, M. N., Kinoti, K. C., &Ogot, E. M. (2011). Prevalence of Lifetime Substance Use among college students in Eldoret, western Kenya. *BMC Psychiatry*, *11*(1). https://doi.org/10.1186/1471-244x-11-34

Bagge, C., & Sher, K. (2008). Adolescent alcohol involvement and suicide attempts: Toward the development of a conceptual framework. *Clinical Psychology Review*, *28*(8), 1283–1296. *https://doi.org/10.1016/j.cpr.2008.06.002*

Belkis.M (2021, April), One UK Student Dies By Suicide Every Four Days – And The Majority Are Male. Why?. https://www.topuniversities.com/student-info/health-support/one-uk-student-dies-suicide-every-four-days-majority-are-male-why

Borges, G., Benjet, C., Orozco, R., & Medina-Mora, M. E. (2017). The growth of suicide ideation, plan and attempt among young adults in the Mexico City metropolitan area. *Epidemiology and psychiatric sciences*, *26*(6), 635-643.

Bronisch, T., Höfler, M., &Lieb, R. (2008). Smoking predicts suicidality: Findings from a prospective community study. *Journal of Affective Disorders*, *108*(1–2), 135–145. *https://doi.org/10.1016/j.jad.2007.10.010*

Czeisler, M. É., Lane, R. I., Petrosky, E., Wiley, J. F., Christensen, A., Njai, R., ... & Rajaratnam, S. M. (2020). Mental health, Lifetime Substance Use, and suicidal ideation during the COVID-19 pandemic—United States, June 24–30, 2020. *Morbidity and Mortality Weekly Report*, *69*(32), 1049.

Dhingra, K., Klonsky, E. D., &Tapola, V. (2019). An empirical test of the Three-Step Theory of suicide in UK University students. *Suicide and Life-Threatening Behavior*, *49*(2), 478-487.

Directorate of Criminal Investigation. (2015). *Anti Narcotics*. Www.Cid.Go.Ke. *http://www.cid.go.ke/index.php/sections/specilizedunits/anti-narcotics.html*

Fisher, W. (2002). Sample size requirements for estimating intraclass correlations with desired precision. *Statistics in medicine*, *21*(9), 1331-1335.

GITARI, J. G. (2020). *CAUSES OF SUICIDAL ACTS AMONGj SECONDARY SCHOOLS'STUDENTS IN CHUKA IGAMBANGOMBE CONSTITUENCY, THARAKA NITHI COUNTY-KENYA* (Doctoral dissertation, Gretsa University).

Goldstone, D., Bantjes, J., Nel, D., Stanbridge, J., & Lewis, I. (2020). Alcohol use predicts emergency psychiatric unit admission for non-fatal suicidal behaviour in the Western Cape (South Africa): a case–control study. *International journal of psychiatry in clinical practice*, *24*(2), 163-172.

Horvath, T., Misra, A., Epner, A., & Cooper, G. (2016). Social learning theory of addiction and recovery implications.

https://nation.africa/counties/muranga/Police--Drugs-to-blame-for-rising-cases-of-suicides/1183310-4829798-format-xhtml-7byhp8z/index.html

Ivey-Stephenson, A. Z., Demissie, Z., Crosby, A. E., Stone, D. M., Gaylor, E., Wilkins, N., ... & Brown, M. (2020). Suicidal ideation and behaviors among high school students—Youth Risk Behavior Survey, United States, 2019. *MMWR supplements*, *69*(1), 47.

Khasakhala, L. I., Ndetei, D. M., & Mathai, M. (2013). Suicidal behaviour among youths associated with psychopathology in both parents and youths attending outpatient psychiatric clinic in Kenya. *Annals of General Psychiatry*, *12*(1), 13. https://doi.org/10.1186/1744-859x-12-13

Kiriru, A. (2018). Effect of awareness on substance abuse among university students in a selected private university in Kenya. *African research journal of education and social sciences*, *5*(2).

Kisilu, J., Ayuya, S., Ndolo, J., &Mwavua, S. (2019). Prevalence and Patterns of Early Drug Abuse among clients attending Ngara Medically Assisted Therapy Clinic Nairobi Kena -A Retrospective Study. Journal of *Alcohol & Drug Abuse, 2 (1); 28, 34*.

Kline, R. B., Hancock, G. R., & Mueller, R. O. (2006). Structural equation modeling: A second course. *IAP-information age publishing*, *54*, 64.

Klonsky, E. D., & May, A. M. (2015). The Three-Step Theory (3ST): A New Theory of Suicide Rooted in the "Ideation-to-Action" Framework. *International Journal of Cognitive Therapy*, *8*(2), 114-129. https://doi.org/10.1521/ijct.2015.8.2.114

Kuria, M. W., Ndetei, D. M., Obot, I. S., Khasakhala, L. I., Bagaka, B. M., Mbugua, M. N., & Kamau, J. (2012). The association between alcohol dependence and depression before and after treatment for alcohol dependence. ISRN Psychiatry.

Kyei, K. A., &Ramagoma, M. (2013). Alcohol Consumption in South African Universities: Prevalence and Factors at the University of Venda, Limpopo Province. *Journal of Social Sciences*, *36*(1), 77–86. https://doi.org/10.1080/09718923.2013.11893175

Mars, B., Burrows, S., Hjelmeland, H., & Gunnell, D. (2014). Suicidal behaviour across the African continent: a review of the literature. *BMC Public Health*, *14*(1). https://doi.org/10.1186/1471-2458-14-606

Megraoui, B. (2018, August 14). *Top Universities*. Top Universities. https://www.topuniversities.com/student-info/health-support/one-uk-student-dies-suicide-every-four-days-majority-are-male-why

Musyoka, C. M., Mbwayo, A., Donovan, D., & Mathai, M. (2020). Alcohol and substance use among first-year students at the University of Nairobi, Kenya: Prevalence and patterns. *Plos one*, *15*(8), e0238170.

NACADA, (2012). Report on Rapid Situation Assessment of drug and substance use disorder disorder in Kenya. Nairobi. Government Printer

Ndetei D M, Khasakhala, L.I, Ongecha-Awour, F.A, Kuria, M.W, Mutiso, V, and Kakonya, D.A (2009): *Prevalence of substance use disorder disorder among patients in general medical facilities in Kenya*

Ndetei, David &Khasakhala, Lincoln &Mutiso, Victoria &Ongecha-Owuor, Francisca &Kokonya, Donald. (2009). *Patterns of Drug Abuse in Public Secondary Schools in Kenya. Substance abuse* : official publication of the Association for Medical Education and Research in Substance Abuse. 30. 69-78. 10.1080/08897070802606436.

Ndungu, G. (2018, October 31). *Police: Drugs to blame for rising cases of suicides*. Daily Nation. *https://www.nation.co.ke/counties/muranga/Police--Drugs-to-blame-for-rising-cases-of-suicides/1183310-4829798-ynove6/index.html*

Ndungu. G(2020, June), Police: Drugs to blame for rising cases of suicides.

Okello, L. M., &Aomo, J. A. (2018). Relationship between emotional intelligence and suicidal behaviour among secondary school students in Kitutu Central Sub-County, Kisii County, Kenya.

Osman, T., Victor, C., Abdulmoneim, A., Mohammed, H., Abdalla, F., Ahmed, A., Ali, E., & Mohammed, W. (2016). Epidemiology of Lifetime Substance Use among University

Students in Sudan. *Journal of Addiction*, *2016*, 1–8. *https://doi.org/10.1155/2016/2476164*

Pedersen, W., & von Soest, T. (2009). Smoking, nicotine dependence and mental health among young adults: a 13-year population-based longitudinal study. *Addiction*, *104*(1), 129–137. https://doi.org/10.1111/j.1360-0443.2008.02395.x

Peltzer, K., &Pengpid, S. (2015). Early substance use initiation and suicide ideation and attempts among school-aged adolescents in four Pacific Island countries in Oceania. *International journal of environmental research and public health*, *12*(10), 12291-12303.

Rasic, D., Weerasinghe, S., Asbridge, M., &Langille, D. B. (2013). Longitudinal associations of cannabis and illicit drug use with depression, suicidal ideation and suicidal attempts among Nova Scotia high school students. *Drug and Alcohol Dependence*, *129*(1–2), 49–53. *https://doi.org/10.1016/j.drugalcdep.2012.09.009*

Salifu, L. D. (2021). *PREVALENCE OF SUICIDE IDEATION AND ITS ASSOCIATED RISK FACTORS AMONG UNDERGRADUATE STUDENTS OF THE UNIVERSITY FOR DEVELOPMENT STUDIES-TAMALE CAMPUS* (Doctoral dissertation).

Sareen, J., Afifi, T. O., McMillan, K. A., & Asmundson, G. J. (2011). Relationship between household income and mental disorders: findings from a population-based longitudinal study. *Archives of general psychiatry*, *68*(4), 419-427.

Shlosberg, D., &Shoval, G. (2021). Suicide and Substance Abuse in Adolescents. *Textbook of Addiction Treatment*, 1501-1518.

Tatz, S. (2019). *The Sealed Box of Suicide: The Contexts of Self-Death*. Springer Nature.

Tom Horvath, Ph.D., ABPP, Kaushik Misra, Ph.D., Amy K. Epner, Ph.D., and Galen Morgan Cooper, Ph.D. , edited by C. E. Zupanick, Psy.D.(2016, June)https://www.centersite.net/poc/view_doc.php?type=doc&id=48346&cn=1408.

United Nations Office on Drugs and Crime (UNODC, 2012). Characteristics, patterns and driving factors inWorld Drug Report 2012. Retrieved from http://www.org/documents/ data analysis/WDR 2012/WDR -2012-chapter 2.Pdf.

van Ours, J. C., Williams, J., Fergusson, D., & Horwood, L. J. (2012). Cannabis Use and Suicidal Ideation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2133267

Wanyoike, B. W. (2015). *SUICIDE AMONG UNIVERSITY STUDENTS IN KENYA: CAUSES, IMPLICATIONS AND INTERVENTIONS*. https://www.ajol.info/index.php/jolte/article/view/125003

Wanzala, O. (2018). *Worrying trend of university students committing suicide*. Daily Nation. https://www.nation.co.ke/news/Worrying-trend-of-university-students-committing-suicide/1056-4886236-3th7vrz/index.html

WHO. (2020, March 11). International Standards for Drug Use Prevention – Second Edition, 2018. Retrieved July 11, 2020, from https://www.who.int/substance_abuse/publications/drugs/en/

Wong, C.-S., & Law, K. S. (1999). Testing Reciprocal Relations by NonrecursiveStructuralequation Models Using Cross-Sectional Data. *Organizational Research Methods*, *2*(1), 69–87. https://doi.org/10.1177/109442819921005

World Health Organization. (2019, August 24). *Suicide*. Who.Int; World Health Organization: WHO.*https://www.who.int/news-room/fact-sheets/detail/suicide*

Zhang, X., & Wu, L.-T. (2014). Suicidal ideation and substance use disorder among adolescents and young adults: A bidirectional relation? *Drug and Alcohol Dependence*, *142*, 63–73. *https://doi.org/10.1016/j.drugalcdep.2014.05.025*

.

APPENDICES

APPENDIX 1. INFORMED CONSENT

Dear Respondent,

Name of Study: "PREVALENCE OF SUICIDAL IDEATION AMONG STUDENTS WITH LIFETIME SUBSTANCE USE IN UNIVERSITIES IN KILIFI COUNTY."

Principal Investigator: Dr. Ruth Masha

A. Consent explanation (To be read and questions answered in a language in which the study subject is conversant; English or Kiswahili,).

My name is Dr. Ruth Masha; I am a pursuing a Masters in Psychiatry at University of Nairobi. I am doing a study entitled PREVALENCE OF SUICIDAL IDEATION AMONG STUDENTS WITH LIFETIME SUBSTANCE USE IN UNIVERSITIES IN KILIFI COUNTYas part of my degree award fulfillment. My supervisors are Dr. John Mburu and Dr. Teresia Mutavi who are all Lecturers in the Department of Psychiatry, University of Nairobi.

The aim of this study is to establish the patterns of Lifetime Substance Use and suicidal ideation among students in public universities in the county of KILIFI and will be carried out under the supervision of my supervisors. The study is medical in nature and as such you should understand that the following will apply to all in similar research. Your participation in this study is completely voluntary and you may decide to withdraw at any time during the interview and this shall not in any way affect you. If you have any questions after reading the explanation, you are free to ask any questions for clarity.

During the study, and if you use drugs, I will access your reasons for substance with an instrument which is administered as a questionnaire and will take 30 minutes of your time. Additionally, I will ask questions regarding suicide and suicide ideation as you answer at will. There is no right or wrong answer and there shall be no evasive procedures like drawing blood and neither shall there be any risk involved during the study. Any information obtained

from the study shall be treated as confidential and your privacy will similarly be upheld. Your name shall only appear on the consent form that will be kept in a separate place where it will be be available for legal purposes or incase one has psychological issues and require urgent attention.

This is an academic research and as such there shall be no compensation or monetary or material gains although the study is significant to universities around Kilifi County and Kenya as a country, and to students in universities who are either addicted to substance use or are experiencing thoughts. If you are found to have any of the mentioned issues, immediate counselling including follow uptreatment. The results of this study shall additionally be available upon a request.

If you have any questions related to this study, or your health you can call me on my telephone number 0722662970 or my lead supervisors at the department of psychiatry, University of Nairobi or KNH/ UON Ethics and Research Committee at Kenyatta National Hospital on telephone number **2726300 Ext 44102**or P.O BOX **20723 -00202**, Nairobi.

CONSENT FORM

I, ……the undersigned do hereby volunteer to participate in this study. The nature and purpose have been fully explained to me by Dr. Ruth Masha.

The role I play by participating in the interviewee is to help the investigators collect information about the pattern of Lifetime Substance Uses and suicidal ideations among students in public universities in kilifi county. This information may or may not be useful in designing better ways to improve mental wellbeing of university students and prevent both suicides and Lifetime Substance Uses around universities in the future. My questions, if any, have been answered to my satisfaction. The Kenyatta National Hospital Research and Ethics Board, may be contacted by research subjects to discuss their rights on **P.O Box 20723-0020 Nairobi** or call on telephone number **02726300 Ext 44102**

Participant's Signature **Researcher's Signature**

…….. **……..**

Date …….. **Date ……..**

Investigators Statement

I (Dr. Ruth Masha) have explained to the respondent the nature and purpose of this study as described above. I have asked the respondent if there are any questions and I have answered them to the best of my knowledge and ability

Witness Signature …….. **Date ……..**

APPENDIX 2: The Alcohol, Smoking and Substance Involvement Screening and Test (ASSIST)

INTER VIEWER ID	**COUNTRY**	**SCHOOL**

SRUDENT CODE

DATE

INTRODUCTION*(Please read to student)*

Thank you for agreeing to take part in this brief interview about alcohol, tobacco products and other drugs. I am going to ask you some questions about your experience of using these substances across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills (show drug card).

Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will not record medications that are used as prescribed by your doctor. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.

NOTE: BEFOREASKINGQUESTIONSS,GIVEASSISTRESPONSECARDTOSTUDENT

Question 1

(if completing follow-up please cross check the patient's answers with the answers given for Q1 at baseline. Any differences on this question should be queried)

In your life, which of the following substances have you <u>ever used</u>? *(NON--MEDICAL USE ONLY)*	**No**	**Yes**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**3**
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**3**
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**3**
d. Cocaine (coke, crack, etc.)	**0**	**3**
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**3**
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**3**
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**3**
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**3**
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**3**
j. Other - specify:	**0**	**3**

If "No" to all items, stop interview.

If "Yes" to any of these items, ask Question 2 for each substance ever used.

Probe if all answers are negative:

"Not even when you were in school?"

Question 2

In the <u>past three months</u>, how often have you used the substances you mentioned *(FIRST DRUG, SECOND DRUG, ETC)*?	**Never**		**Once or Twice**		**Monthly**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**2**	**3**	**4**	**6**
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**2**	**3**	**4**	**6**
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**2**	**3**	**4**	**6**
d. Cocaine (coke, crack, etc.)	**0**	**2**	**3**	**4**	**6**
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**2**	**3**	**4**	**6**
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**2**	**3**	**4**	**6**
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**2**	**3**	**4**	**6**
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**2**	**3**	**4**	**6**
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**2**	**3**	**4**	**6**
j. Other - specify:	**0**	**2**	**3**	**4**	**6**

If "Never" to all items in Question 2, skip to Question 6.

If any substances in Question 2 were used in the previous three months, continue with Questions 3, 4 & 5 for <u>each substance</u> used.

Question 3

During the <u>past three months</u>, how often have you had a strong desire or urge to use *(FIRST DRUG, SECOND DRUG, ETC)*?	**Never**		**Once or Twice**	**Monthly**	**Weekly**	**Almost Daily or**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**3**	**4**	**5**	**6**	
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**3**	**4**	**5**	**6**	
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**3**	**4**	**5**	**6**	
d. Cocaine (coke, crack, etc.)	**0**	**3**	**4**	**5**	**6**	
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**3**	**4**	**5**	**6**	
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**3**	**4**	**5**	**6**	
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**3**	**4**	**5**	**6**	
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**3**	**4**	**5**	**6**	
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**3**	**4**	**5**	**6**	
j. Other - specify:	**0**	**3**	**4**	**5**	**6**	

Question 4

During the past three months, how often has your use of *(FIRST DRUG, SECOND DRUG, ETC*) led to health, social, legal or financial problems?	**Never**		**Once or Twice**		**Monthly Weekly**	**Daily or Almost**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**4**	**5**	**6**	**7**	
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**4**	**5**	**6**	**7**	
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**4**	**5**	**6**	**7**	
d. Cocaine (coke, crack, etc.)	**0**	**4**	**5**	**6**	**7**	
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**4**	**5**	**6**	**7**	
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**4**	**5**	**6**	**7**	
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**4**	**5**	**6**	**7**	
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**4**	**5**	**6**	**7**	
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**4**	**5**	**6**	**7**	
j. Other - specify:	**0**	**4**	**5**	**6**	**7**	

Question 5

During the <u>past three months</u>, how often have you failed to do what was normally expected of you because of your use of *(FIRST DRUG, SECOND DRUG, ETC*)?	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
a. Tobacco products					
b. Alcoholic beverages (beer, wine, spirits, etc.)	**5**	**6**	**7**	**8**	
c. Cannabis (marijuana, pot, grass, hash, etc.)	**5**	**6**	**7**	**8**	
d. Cocaine (coke, crack, etc.)	**5**	**6**	**7**	**8**	
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**5**	**6**	**7**	**8**	
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**5**	**6**	**7**	**8**	
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**5**	**6**	**7**	**8**	
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**5**	**6**	**7**	**8**	
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**5**	**6**	**7**	**8**	
j. Other - specify:	**5**	**6**	**7**	**8**	

Ask Questions 6 & 7 for all substances ever used (i.e. those endorsed in Question 1)

Question 6

Has a friend or relative or anyone else <u>ever</u> expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)?*		**No, Never**	
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**6**	**3**
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**6**	**3**
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**6**	**3**
d. Cocaine (coke, crack, etc.)	**0**	**6**	**3**
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**6**	**3**
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**6**	**3**
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**6**	**3**
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**6**	**3**
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**6**	**3**
j. Other – specify:	**0**	**6**	**3**

Question 7

Have you <u>ever</u> tried and failed to control, cut down or stop using ***(FIRST DRUG, SECOND DRUG, ETC.)?***	**No, Never**	**notinthe months**	
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	**0**	**6**	**3**
b. Alcoholic beverages (beer, wine, spirits, etc.)	**0**	**6**	**3**
c. Cannabis (marijuana, pot, grass, hash, etc.)	**0**	**6**	**3**
d. Cocaine (coke, crack, etc.)	**0**	**6**	**3**
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	**0**	**6**	**3**
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	**0**	**6**	**3**
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	**0**	**6**	**3**
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	**0**	**6**	**3**
i. Opioids (heroin, morphine, methadone, codeine, etc.)	**0**	**6**	**3**
j. Other – specify:	**0**	**6**	**3**

Question 8

	No, Never	Yes, in the
Have you <u>ever</u> used any drug by injection? *(NON- MEDICAL USE ONLY)*	**0**	

IMPORTANTNOTE:

Studentsntswhohaveinjecteddrugsinthelast 3monthsshouldbeaskedabouttheirpatternofinjectingduringthisperiod,todeterminetheirrisklevelsandthebestcourseofintervention.

PATTERN OF INJECTING **INTERVENTION GUIDELINES**

Onceweeklyorless or Fewerthan3daysinarow → **BriefIntervention including"risksassociated withinjecting"card**

Morethanonceperweek or 3ormoredaysinarow → **Furtherassessmentandmoreintensivetreatment***

HOW TO CALCULATE A SPECIFIC SUBSTANCE INVOLVEMENT SCORE .

For each substance (labelled a. to j.) add up the scores received for questions 2 through 7 inclusive. Do not include the results from either Q1 or Q8 in this score. For example, a score for cannabis would be calculated as: Q2c + Q3c + Q4c + QQ5c + QQ66cc ++ QQ77cc

Note that Q5 for tobacco is not coded, and is calculated as: Q2a + Q3a + Q4a + Q6a + Q

THE TYPE OF INTERVENTIION IS DETERMINED BY THE STUDENT'SSPECIFIC SUBSTANCE INVOLVEMENT SCORE

	Record specific substance score	no intervention	receive brief intervention	more intensive treatment *
a. tobacco		0 - 3	4 - 26	27 +
b. alcohol		0 - 10	11 - 26	27 +
c. cannabis		0 - 3	4 - 26	27 +
d. cocaine		0 - 3	4 - 26	27 +
e. amphetamine		0 - 3	4 - 26	27 +
f. inhalants		0 - 3	4 - 26	27 +
g. sedatives		0 - 3	4 - 26	27 +
h. hallucinogens		0 - 3	4 - 26	27 +
i. opioids		0 - 3	4 - 26	27 +
j. other drugs		0 - 3	4 - 26	27 +

APPENDIX 5: SBQ-R Suicide Behaviors Questionnaire-Revised

Student Code_____**Date of Interview**_____

Instructions:Pleasecheckthenumberbesidethestatementorphrasethatbest applies toyou.

1. Have you ever thought about or attempted to kill yourself?(check one only)

- ☐ 1. Never
- ☐ 2. It was just a brief passingthought
- ☐ **3a. I have had a plan at least once to kill myself but did not try to do it**
- ☐ **3b.Ihavehadaplanatleastoncetokillmyselfandreallywantedtodie 4a. I have**
- ☐ **attempted to kill myself, but did not want todie**
- ☐ **4b.Ihaveattemptedtokillmyself,andreallyhopedtodie**
- ☐

2. How often have you thought about killing yourself in the past year? (check oneonly)

- ☐ 1. Never
- ☐ 2. Rarely (1time)
- ☐ 3. Sometimes (2times)
- ☐ 4. Often (3-4times)
- ☐ 5. Very Often (5 or moretimes)

3. Have you ever told someone that you were going to commit suicide, or that you might do it?(check one only)

- ☐ 1. No
- ☐ **2a. Yes, at one time, but did not really want to die 2b. Yes,**
- ☐ **at one time, and really wanted to die**
- ☐ **3a. Yes, more than once, but did not want to do it 3b. Yes,**
- ☐ **more than once, and really wanted to do it**

4. Howlikelyisitthatyouwillattemptsuicidesomeday?(check oneonly)

- ☐ 0. Never
- ☐ 1. No chanceatall
- ☐ 2. Ratherunlikely
- ☐ 3. Unlikely
- ☐ 4 Likely
- ☐ 5. Ratherlikely
- ☐ 6. Verylikely

© Osman et al (1999) Revised. Permission for use granted by A.Osman, MD

APPENDIX 4: STUDY TIMELINE

Table 6: Timelines of the Study

Activity	Timeline
Proposal development and defense	Jan 2022
Ethical clearance	Feb 2022
Data collection	Mar 2022
Data analysis	Apr 2022
Thesis and manuscript writing and defense	Jul 2022

APPENDIX 6:Budget

Table 4.4.1: Budget

ITEM DESCRIPTION	Unit cost	Quantity	COST (KSH)
1. Transportto and from coast	@kshs 2500	4 times 1 psn	10000
2. Accommodation	@kshs 3500	15 days 1 psn	52500
3. Food	@ kshs 1500	15 days 1 psn	22500
4. Printing of data collection forms	@kshs 30	questionnaire 150 copies	4500
5. Printing,binding & photocopy of manuscripts and proposal	@Kshs 4000	60 copies proposal, 3 photocopies, 3 binding copies, and 3 notebooks	4000
6. Statistician	@Kshs 40,000	1 copy	40000
7. Miscellaneous	@Kshs 4000	N/A	4000
8. ERC Review fee	@Kshs 2000	1	2000
9. Communication costs	@Kshs 5000	5000	5000
Total			**144,500**

3.22 Budget Description and Justification

Transport: The researcher will make trips to and from Pwani Universityand MKU Malindi campus beforeand during the research duration.

Accommodation: The researcher will need accommodation while visiting these two universities as it will happen over a period of time

Running Cost: Upon arrival at PwaniUniversity and MKU Malindi campus, the researcher will need food, accommodation among other things.

Printing of data collection costs: The consent forms along with the relevant interview booklets will be printed at a cost.

Printing and Binding of manuscripts and proposal: This is cash for printing both the research proposal and project

Statistician: The researcher will employ a mathematician to handle the data analysis part of the research and this will attract a slightly higher fee

Miscellaneous: This is cost for any costs during the research that will be unforeseen before and during the budget allocation.

ERC review fee: This is a standardized fee charged by the ethics and research committee on any project proposals.

Communication costs: The research will involve various personnel and this means there will be various communication between the researcher and other stakeholders in each University.

APPENDIX 4: MAP OF KILIFI COUNTY