# FACTORS ASSOCIATED WITH THE USE OF CODEINE-CONTAINING DRUGS AMONG YOUTH IN MANDERA COUNTY, KENYA.

**BY**

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**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, MOI UNIVERSITY IN PARTIAL FULFILMENT FOR THE AWARD OF MASTERS DEGREE IN PUBLIC HEALTH**

## DECLARATION

This research project is my original work and has not been submitted for examination in this University or any other University.

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# DEDICATION

This thesis is wholeheartedly dedicated to my beloved family, whose unwavering love, encouragement, and sacrifices have carried me through every stage of this long academic journey. Your faith in me, even during the most challenging moments, gave me the strength to persevere and complete this work.

I also dedicate this work to my friends, who continuously supported me, motivated me, and reminded me that no challenge is insurmountable. Your understanding and companionship made this journey less lonely and more meaningful.

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## ABSTRACT

**Background**: Drug and substance use is a long-standing global problem affecting the developed, low and middle-income countries. In Kenya, it disproportionately impacts the youth, who form the most productive segment of the population. The issue has drawn attention from national and county governments, as well as religious leaders, political actors and non-governmental organizations working to raise awareness about the dangers and long term consequences of drug and substance use. The non-therapeutic use of Codeine containing drugs, a medication used to treat pain, cough and diarrhoea has been on the rise. In Mandera, mixing of codeine containing cough syrups with soft drinks during miraa-chewing sessions is believed to be common among the youth; however, formal data on prevalence, types of codeine used and associated social-behavioural and cultural factors has been lacking.

**Objectives:** The objective of the study was to investigate factors associated with use of codeine containing drugs among youth in Mandera. The specific objectives were to establish the prevalence of codeine-containing drugs' use and to identify the social-behavioural, demographic and economic factors associated with use of codeine containg drugs among the youth in Mandera county.

**Methods:** A quantitative, cross-sectional survey was conducted in Mandera East among 405 youths aged 18-35 years. Data was collected using a semi-structured questionnaire, cleaned, coded and analyzed using SPSS version 23 to generate descriptive statistics (frequencies and percentages) and inferential results on associations between variables.

**Results:** Overall, 65.4 % of respondents had chewed Miraa. The prevalence of codeine-containing drugs use ranged from 7.1% for Bronkof Syrup (least used) to 16.6% for Betapyn (most used). Key factors significantly associated with codeine containing drug use included peer influence, unemployment, low income, low educational attainment, weak or absent parental guidance and gender, with male more likely to use these drugs.

**Conclusion**: The use of tcodeine-containing drugs among youth in Mandera County is influenced by a combination of socio-economic, behavioral and demographic factors. The findings highlight the need for targeted interventions to reduce access and misuse.

**Recommendations**: The study recommends that the national drug regulatory authority strengthen control over the production, importation, distribution and sale codeine-containing medicines, with specific attention to unregulated outlets such as Miraa vendors, drug peddlers, kiosks, bars and cigarette stands. Additionally, youth engagement in productive activities including employment, sports and social or economic programs. This should be prioritized to reduce vulnerability to drug misuse.

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| | |
|---|---|
| **CCCS** | Codeine Containing Cough Syrup |
| **CICAD** | Inter-American drug use control commission |
| **CMD** | Common Mental Disorders |
| **DHS** | Demographic and Health Survey |
| **EFA** | Education for All |
| **IREC** | Institutional Research & Ethics Committee |
| **KV2030** | Kenya Vision 2030 |
| **NACADA** | National Campaign Against Drug Use |
| **NACOSTI** | National Commission for Science, Technology and Innovation |
| **NGOs** | Non-Governmental Organizations |
| **NUCS** | Non-medical Use of Cough Syrup |
| **OTC** | Over the Counter |
| **POMs** | Prescription Only Medicines |
| **PPB** | Pharmacy and Poisons Board |
| **SDGs** | Sustainable Development Goals (SDGs) |
| **SPSS** | Statistical Package for the Social Sciences |
| **TGA** | Therapeutic Goods Administration |
| **UN** | United Nations |
| **UNDP** | United Nations Development Programme |
| **UNODC** | United Nations Office on Drugs and Crime |
| **USA** | United States of America |
| **WHO** | World Health Organization |

# DEFINITION OF TERMS

**Drug** Is any substance that, when absorbed into the body of a living organism, alters normal bodily function.

**Narcotics** These are drugs from the opiate family such as bhang, cocaine and heroin.

**Drug use** Drug use is the non-medical use of drugs that destroys the health and productive life of an individual.

**Drug dependency** A physical and or psychological need for a mood-altering substance.

**Addiction** Having a physical and /or psychological dependence on a substance.

***Miraa*** A shrub (*Catha edulis*) of the staff-tree family that is cultivated in the Middle East and Africa for its leaves and buds which are the source of a habituating stimulant when chewed.

**Youth** The United Nations, for statistical purposes, defines 'youth', as those persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States. In Kenya and as used in this study, youth is defined as a person between the age of 18 and 35 years.

**Opiates** A type of narcotic drug that acts as a depressant in the central nervous system. They come from opium. They include hydrocodone, heroin and oxycodone.

# CHAPTER ONE: INTRODUCTION

## 1.1 Introduction

The history of drug and substance use spans across civilizations, representing a longstanding aspect of human behavior. From ancient times to the present day, various cultures have engaged in the consumption of substances for medicinal, recreational and ritualistic purposes. However, alongside legitimate usage, there has always been a subset of individuals who misuse drugs, consuming them in ways that lead to negative consequences for themselves and society at large. Drug misuse is characterized by the self-administration of substances for non-medical reasons, often in quantities and frequencies that impair functioning and contribute to physical, social and emotional harm. This misuse typically falls outside the boundaries of legal and prescribed medical use, highlighting the complex interplay between regulation, accessibility and societal norms (Adeleke et al., 2019).

As societies have evolved, so too have our understandings of the physical and mental health implications associated with drug misuse. Increasing awareness of addiction and its impacts has prompted the development of rehabilitation efforts aimed at addressing substance abuse and supporting affected individuals. However, despite these interventions, the prevalence of illegal drug use and the misuse of therapeutic medications have surged in recent decades, transcending geographical and socioeconomic boundaries. This global phenomenon poses significant challenges for public health systems and underscores the need for multifaceted approaches to prevention and treatment (Van Hout et al., 2018).

Among the substances commonly misused are over-the-counter (OTC) medications, which include opioids like codeine, dihydrocodeine and loperamide. Despite their intended therapeutic purposes, these drugs are susceptible to diversion and misuse due

to their psychoactive effects. Recognizing the potential for harm, some countries have implemented regulatory measures to restrict access to certain OTC medications, aiming to mitigate misuse liability and associated health risks. However, the persistence of drug misuse underscores the importance of ongoing research, education and intervention efforts to address the complex factors driving substance abuse and addiction (Sobczak et al., 2020).

### 1.2 Background of the Study

Codeine-containing medicines have long played an important role in managing pain and suppressing cough, owing to their central nervous system activity and ability to induce analgesic and calming effects (Dean, 2017). While these therapeutic benefits make codeine a valuable drug in clinical practice, its non-therapeutic use of psychoactive effects have also made it a substance that is prone to misuse especially among young people. When consumed in higher-than-recommended doses, codeine-containing syrups can create feelings of euphoria, relaxation and intoxication similar to alcohol (Reguly et al., 2014). Because these effects occur without the noticeable smell that accompanies alcohol consumption, many adolescents find codeine appealing as a discreet way of getting intoxicated (Akande-Sholabi et al., 2019).

Despite its usefulness as a medication, codeine carries significant risks. It’s misuse can lead to dependence, tolerance and potentially life-threatening side effects such as respiratory depression and particularly among the elderly, debilitated patients and those with pre-existing respiratory conditions (Tchoe et al., 2020; Hong et al., 2010; Cowie, 2017). The affordability and availability of codeine and codeine containg medicines sometimes even without proper prescriptions have led to concerns about it’s widespread misuse globally and particularly in our region.

Internationally, the non-therapeutic use of all opioid-containing medications has grown steadily. In the United States, around 0.3%–0.4% of the population misuse codeine-containing medications (Inter-American Drug Use Control Commission Report, 2015). Similar patterns have been observed in India, China and Japan, especially among youth (Olasunkanmi et al., 2019; Wu et al., 2016). Australia has also experienced rising misuse and related deaths, leading to stronger regulation and restrictions around codeine access (Therapeutic Goods Administration, 2017; Cowie, 2017). These patterns and trend shows how a medically important and useful drug can easily become a harmful substance when control measures are insufficient.

Many countries across Africa, codeine misuse has become a growing public health challenge. Nigeria reports some of the highest levels, with an estimated six million bottles of codeine-containing cough syrups consumed daily by young people (Yusuf et al., 2016). The UNODC estimates that approximately 37,000 African youth die annually from substance-related causes, including codeine misuse (UNODC, 2018). Such figures highlight the scale and urgency of being concerned and addressing codeine misuse among young populations.

In Kenya, the misuse of codeine-containing drugs and especially by the young people has been noted for more than a decade. NACADA's 2012 survey reported widespread use among Kenyan youth, pointing to weak enforcement of regulations requiring a valid prescription (NACADA, 2012). Unlicensed sellers and poorly regulated drug outlets have continued to make these substances easily accessible (Cowie, 2017). In northern Kenya, including Mandera County, codeine misuse is often intertwined with miraa and muguka chewing sessions, where young men frequently consume codeine-

containing syrups to enhance the stimulating effects of these substances (Otsialo, 2018).

Mandera County in particular has recorded growing concern over the misuse of codeine-containing medicines among youth. Reports indicate that some young people conceal these syrups in soda bottles or other containers to avoid detection by parents, teachers or community leaders (Otsialo, 2018). The Kenya National Adolescents and Youth Survey (2015) links this behaviour to increased school dropout, involvement in crime, clan conflicts and even premature deaths. Evidence also shows that youths in communities facing economic hardship may turn to drugs as coping mechanisms (Dube et al., 2014; Muyuri et al., 2014).

A range of different factors has been associated with codeine misuse among youth in Mandera County. These include peer pressure, social acceptance of substance use during miraa sessions, easy access through informal drug outlets, unemployment, idleness, weak parental supervision and limited awareness of the harmful effects of misuse (Akande-Sholabi et al., 2019; NACADA, 2012). Despite this, there is limited research that documents the extent of the problem and the specific factors that determine the nisuse of codeine within Mandera county.

This gap in empirical data presents a major challenge for policymakers, healthcare providers, regulators, government enforcement agencies and community leaders trying to respond to the issue effectively. As Mandera County works toward achieving national and global development goals such as Vision 2030, the Sustainable Development Goals and the Education for All agenda (UNDP, 2015; Government of Kenya, 2007 addressing drug misuse among its youth and especially the misuse of codeine becomes very essential. Understanding the patterns and factors influencing

codeine misuse is therefore critical for designing targeted interventions and safeguarding the wellbeing and future productivity of young people in the county.

### 1.3 Statement of the problem

Despite the therapeutic importance of codeine, its misuse among youth in Mandera County has become increasingly alarming. Reports show that many young people now consume codeine-containing syrups recreationally, often alongside miraa or disguised in soft drink bottles to avoid detection (Otsialo, 2018). This pattern of misuse has been linked to school dropout, insecurity, clan conflict and early deaths among young people, according to the Kenya National Adolescents and Youth Survey (2015).

Although these concerns are widely acknowledged by community members and authorities, there is limited empirical evidence documenting the extent of codeine misuse among youth in Mandera or the factors that drive young people to this behaviour. National surveys by NACADA and others provide broad insights, but data that are specific to Mandera county are lacking. Without such kind of accurate information, efforts by Mandera County government and other concerned stakeholders to design effective prevention, management and policy interventions remain constrained.

This study therefore seeks to bridge this knowledge gap by investigating the prevalence and determinants of codeine misuse among youth in Mandera County.

### 1.4 Justification the Study

The misuse of codeine-containing drugs among youth has become a public health problem both globally and locally. Although codeine is an important medicine, its ability to create feelings of euphoria has led many young people to use it for non-therapeutic reasons, exposing them to dependence, illness and in some cases death. Reports from organizations like Australia's Therapeutic Goods Administration (TGA) highlight the severity of the issue, with data revealing a troubling 420 deaths in 2015 attributed to the abuse of codeine-containing medications (TGA, 2017). These trends shows the need for timely local research to inform context-specific interventions.

In Mandera Town, community members and local reports increasingly point to young people turning to codeine-containing syrup often mixed with soda or taken alongside Miraa, Muguka, bhang or alcohol. These drugs are easily accessed through chemists and other unregulated outlets, making it even harder for parents, teachers and leaders to protect the young people from the harm caused by such drugs. As a result of these, some youths may experience school dropout, risky behaviour, poor mental health and involvement in crime. These outcomes not only affect individuals but also place a heavy burden on families, the larger community and the country.

Despite the growing concern, there is still limited research that shows why young people in Mandera misuse codeine and what social and behavioural factors put them at such a risk**.** Stakeholders including Health authorities, the county government, NACADA, the Pharmacy and Poisons Board, educators and community leader equire reliable data in order to design targeted prevention and intervention programs. Understanding the social, behavioural and environmental drivers of codeine misuse is especially important in Mandera, whose unique position at the border with two

countries creates cultural, economic and security dynamics that may influence youth vulnerability differently from other regions of Kenya.

This study is important because it fills a key knowledge gap in understanding why young people in Mandera misuse codeine. It not only shows how widespread the problem is and the types of codeine-containing products being misused, but also provides much-needed insight into the socio-behavioural, demographic and economic factors that contribute to this behaviour. These findings will help:

- guide the development of practical policies and regulations
- strengthen community and school-based prevention and awareness programmes
- inform targeted interventions for at-risk youth
- support the enforcement of pharmaceutical controls
- shape future research on youth substance misuse

By providing clear, context-specific evidence, this study will help reduce harm, improve public health and contribute to a safer and more supportive environment for young people in Mandera County.

### 1.5 Significance of the Study

The study will provide valuable and timely evidence for policymakers, healthcare providers, educators and community leaders who are increasingly confronted with the rising concern of codeine misuse in Mandera County. By offering a clearer understanding of the magnitude of the problem, as well as the socio-behavioural and environmental factors driving misuse among young people, the study will equip decision-makers with reliable data on which to base informed action. The insights generated will play a crucial role in shaping targeted prevention strategies that

respond to the needs and realities of the local population. They will also support the strengthening of regulatory frameworks, particularly those related to the sale, distribution and monitoring of codeine-containing products. Furthermore, the findings will guide the development of youth-focused intervention programmes within schools, health facilities and community settings, ultimately helping to reduce the harmful consequences associated with codeine misuse.

Beyond informing practice and policy, the study's outcomes will contribute significantly to the existing academic literature by filling gaps in knowledge on substance use in marginalised and hard-to-reach areas such as Mandera County. This contribution is especially important given the limited empirical research available on codeine misuse in northern Kenya. Finally, the evidence gathered will support the county's broader public health agenda and its long-term development goals by promoting a healthier, more informed and more resilient youth population.

### 1.6 Scope of the Study

The study focuses on youth aged 15–24 years residing in Mandera County. It examines their use of codeine-containing medicines, the factors influencing misuse and the broader social and economic context affecting consumption patterns. Other substances are referenced only when they relate directly to codeine misuse

### 1.7 Research Questions

(i) What are the commonly used codeine-containing drugs in Mandera County?

(ii) What socio-behavioral factors are associated with the misuse of codeine-containing drugs among the youth in Mandera County?

(iii) What are the socio-demographic factors associated with the misuse of codeine-containing drugs among the youth in Mandera County?

## 1.8 Research Objectives

### 1.8.1 General objective

The general objective of the study was to investigate factors associated with the use of codeine-containing drugs among youth in Mandera town to provide information that will guide policy formulation against codeine misuse in the country.

### 1.8.2 Specific Objectives

This study was guided by the following specific objectives:

1. To identify the commonly used codeine-containing drugs in Mandera County.
2. To determine the socio-behavioral factors associated with the misuse of codeine-containing drugs among youth in Mandera County
3. To identify the socio-demographic and socio-economic factors associated with the misuse of codeine-containing drugs among youth in Mandera County

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# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

This chapter presents a comprehensive and analytical review of the literature relevant to the study, organised in line with the study objectives. It examines global, regional and local patterns of drug and substance use with a particular emphasis on the misuse of codeine-containing products. The aim is not only to describe existing trends but also to analyse the underlying social, economic and cultural factors that shape substance use behaviours. This provides a strong conceptual basis for understanding the extent of the problem and the rationale for investigating codeine misuse in Mandera County.

Globally, drug and substance use continues to pose significant threats to public health, social cohesion and economic stability (Khurana et al., 2019). These concerns are especially pronounced among adolescents and young adults, who are more susceptible to experimentation due to developmental transitions and peer influence. Examining how these global patterns manifest within Africa—including Kenya, Somalia and Ethiopia—enables a deeper understanding of the contextual factors that influence substance use in diverse environments (Muyuri et al., 2014).

In Kenya, particularly in marginalised border counties such as Mandera, the problem is exacerbated by high unemployment, insecurity, low literacy levels and strong cross-border drug flows. These conditions create environments where youth may resort to drugs as coping mechanisms or due to social influence. By reviewing these dynamics, this chapter highlights key gaps in existing literature and underscores the importance of the present study in providing evidence-based insights into codeine misuse.

## 2.1 Global, Regional and Local Patterns of Codeine Misuse

### 2.1.1 Global Patterns and Emerging Trends

Substance use worldwide continues to evolve as social, cultural and economic shifts influence the availability and consumption of drugs (Khurana et al., 2019). A notable global trend is the increasing misuse of over-the-counter (OTC) and prescription medicine, including opioid-containing cough syrups such as codeine. Although codeine is a milder opioid compared to heroin, its prolonged misuse can result in tolerance, dependence and adverse health outcomes.

Among adolescents, the misuse of OTC medicines has gained attention due to rising experimentation and peer-normalised behaviour. Studies in China highlight that 3.5% of vocational school students engage in non-medical use of cough syrups (Wu, 2016; Shek et al., 2006). These youth often struggle with academic difficulties, reduced self-esteem and psychosocial stressors, which increase their vulnerability to drug use.

The misuse of opioid medicines is not limited to adolescents. In Sweden, rising opioid analgesic use among older adults—particularly drivers aged 50 to 80—has raised concerns about impaired driving and road safety (Monárrez-Espino et al., 2016). Evidence from the UK, France and Portugal further reinforces that non-prescription medicine misuse is a growing global concern, with lifetime misuse rates ranging from 6.8% to 19.3% (Fingleton et al., 2016; Pourcel et al., 2013; Lucchese et al., 2017). Taken together, these studies show that codeine misuse is a global phenomenon affecting varied age groups and populations.

### 2.1.2 Regional Context: East Africa (Kenya, Somalia and Ethiopia)

In East Africa, patterns of substance misuse are shaped by cultural practices, cross-border trade and socio-economic conditions. Kenya, Somalia and Ethiopia share interconnected markets and social behaviours due to their geographical proximity and historical ties.

In Somalia, decades of conflict and weak regulatory structures have created environments where pharmaceuticals circulate through informal markets. Codeine-containing medicines are easily accessible, with youth often obtaining them through unregulated vendors. These products frequently find their way into Kenya through smuggling routes that cross Mandera County.

In Ethiopia, the rising prevalence of stimulant use, including Miraa (Khat), has contributed to polysubstance use patterns in urban and rural communities. Increasing availability of codeine-containing medicines also raises concern about emerging misuse trends among Ethiopian youth. Environmental pressures, such as unemployment and rapid social change, further heighten vulnerability.

This regional context is crucial for understanding Mandera County, which lies at the nexus of Kenya–Somalia–Ethiopia border interactions. Drug accessibility, informal distribution networks and cultural overlap contribute to the spread and normalisation of codeine misuse.

### 2.1.3 National Picture: Drug and Codeine Misuse in Kenya

Kenya continues to face a substantial drug use burden affecting urban and rural populations. Students, youth and healthcare workers have been identified as groups at heightened risk (Atwoli et al., 2011; Kerubo et al., 2016; Mokaya et al., 2016). As

both a transit point for illicit drugs and a market for pharmaceuticals, Kenya struggles with rising misuse of OTC and prescription medicines.

Chesang (2016) observes that despite national interventions, the misuse of products such as codeine syrup remains prevalent. A national survey conducted in 2012 documented widespread use of codeine-containing medicines among youth in towns across Kenya, including Mandera (Otsialo, 2018). Studies further indicate that addiction linked to these medicines is growing, posing significant health and social risks (Dada et al., 2015).

Weak enforcement mechanisms and the availability of codeine through informal vendors complicate regulatory efforts. In many regions, particularly remote counties, pharmacies and informal drug sellers may distribute these products without adequate oversight. As youth seek accessible substances with perceived lower stigma, codeine becomes an appealing option.

### 2.1.4 Local Context: Mandera County

Mandera County presents unique social and economic challenges that shape patterns of substance use. High unemployment, insecurity, low literacy levels and frequent inter-clan conflicts contribute to a stressful environment for young people (Mandera County Government, 2013). These conditions often drive youth into social networks where Miraa chewing and codeine syrup consumption are common.

The co-use of Miraa and codeine-containing cough syrups has become increasingly normalised in Mandera (Mandera County Government, 2018). Because of its proximity to Somalia, the county experiences significant inflow of unregulated

pharmaceuticals. Weak enforcement capacity allows such products to circulate widely, contributing to misuse among youth.

Investigations by the Pharmacy and Poisons Board (PPB) revealed high sales volumes of codeine-containing drugs in Mandera Town (Otsialo, 2018). This trend highlights a pressing public health issue but also demonstrates a lack of comprehensive research specific to the county. The limited data underscores the importance of the current study in providing empirical evidence to inform interventions.

## 2.2 Factors Associated with Codeine Misuse

### 2.2.1 Socio-Demographic Factors

Socio-demographic factors significantly influence patterns of drug use. Adolescents and young adults remain the most vulnerable due to their developmental stage, curiosity, exposure to peer influence and increased risk-taking behaviours (Khurana et al., 2019). Low academic performance, early exposure to alcohol and low self-esteem have also been linked to substance use among Kenyan students (Ambale, 2015).

Studies from Ethiopia and South Africa show similar patterns, where limited educational attainment and social vulnerability increase the likelihood of substance misuse (Tesfaye et al., 2014; Shisana et al., 2012). Gender differences may also shape drug use behaviours, although emerging evidence suggests that females increasingly engage in misuse of pharmaceuticals due to ease of access and lower stigma.

### 2.2.2 Social and Behavioural Factors

Social and behavioural factors are strongly associated with codeine misuse. Peer pressure remains one of the most influential drivers of adolescent drug use (Peltzer et al., 2018). Youth who interact with peers who use substances are more likely to imitate these behaviours in pursuit of acceptance or belonging.

Family environments also play a critical role. Weak parental supervision, family conflict, parental substance use and limited emotional support have been identified as significant contributors to drug misuse (Muyuri et al., 2014). Youth may also resort to drugs to cope with stress, trauma or psychological distress.

Media influences further shape perceptions of drug use. In Nigeria, exposure to music, entertainment and social media content that glamorises drug use has been linked to increased youth experimentation (Nyameh et al., 2013; Ikoh et al., 2019). Such influences are relevant to Kenyan youth, who have substantial access to digital platforms.

### 2.2.3 Economic and Environmental Factors

Economic pressures such as unemployment and poverty are major risk factors for substance misuse. In Mandera County, high unemployment levels and limited economic opportunities heighten youth vulnerability to drug use as a means of coping with stress or idleness (Mandera County Government, 2013).

Availability and affordability of codeine-containing medicines also influence misuse. These drugs are relatively inexpensive and easily accessible through informal markets, especially due to cross-border inflows from Somalia. Environmental stressors, including insecurity and inter-clan conflicts, may further increase reliance on substances for relief.

### 2.2.4 Cultural Factors

Cultural practices strongly shape patterns of drug consumption. Miraa chewing is deeply ingrained in northern Kenyan culture and often takes place in communal settings where youth socialise. These gatherings sometimes incorporate the use of

codeine-containing syrups, contributing to polysubstance use (Mandera County Government, 2018).

Because pharmaceuticals such as codeine are perceived as less harmful than illicit drugs, youth may underestimate their risks. Cultural acceptance of stimulant use among Somali and Ethiopian communities also influences behaviour in Mandera, where cross-border social ties are strong.

## 2.3 Effects of Codeine Misuse on Individuals and Communities

### 2.3.1 Health Consequences

Prolonged misuse of codeine leads to dependence, withdrawal symptoms and addiction (Monárrez-Espino et al., 2016). Psychological effects may include mood disorders, anxiety and cognitive impairment. Physical consequences include respiratory depression, liver strain, gastrointestinal issues and weakened immunity.

Among pregnant adolescents, substance use has been associated with poor maternal and neonatal health outcomes (Kimbui et al., 2018). These risks likely extend to codeine misuse, especially when combined with other substances.

### 2.3.2 Social Effects

Substance misuse disrupts social functioning, contributing to family conflict, behavioural problems and weakened community relationships. Adolescents involved in drug use often exhibit truancy, academic underachievement and dropout (Atwoli et al., 2011). These outcomes limit future opportunities and contribute to cycles of poverty.

Communities may experience increased insecurity and reduced social cohesion due to substance-related behavioural issues.

### 2.3.3 Economic Effects

Drug misuse imposes financial strain on households and the broader economy. Money spent on substances reduces resources allocated to essential needs such as food, healthcare and education. Society bears additional costs through reduced productivity, increased healthcare expenses and greater law enforcement demands (Dube & Orodho, 2014).

In Mandera County, where economic opportunities are insufficient, the economic effects can be particularly severe, hindering development efforts and reducing workforce potential.

## 2.4 Summary of Literature Gaps

Despite an increasing body of literature on drug and substance use, several important gaps remain in understanding the misuse of codeine-containing drugs, particularly within the context of Mandera County. To begin with, there is limited empirical data specifically focused on Mandera, making it difficult to establish the true extent of codeine misuse or to design interventions that adequately reflect the county's unique socio-cultural and economic conditions. Although Miraa chewing is widespread in the region and often occurs alongside the use of codeine-containing cough syrups, existing studies provide insufficient examination of the combined or synergistic use of Miraa and codeine, despite indications that such co-use may heighten both health and behavioural risks.

Equally, the role of regional cross-border influences from Somalia and Ethiopia remains minimally explored, even though these neighbouring countries contribute significantly to the availability and circulation of unregulated pharmaceutical products in Mandera. Youth motivations, coping mechanisms and behavioural pathways

leading to codeine misuse also remain poorly understood, yet young people constitute the demographic most affected by substance use in the county. Furthermore, little attention has been given to the socio-economic determinants of drug use in border communities—such as unemployment, poverty, insecurity and limited livelihood opportunities—which may play a critical role in shaping substance use behaviour. Finally, gaps persist in the assessment of regulatory and policy enforcement challenges, particularly the effectiveness of Pharmacy and Poisons Board (PPB) oversight in remote and underserved areas where informal drug markets are common. Collectively, these gaps underscore the need for focused, context-specific research to generate evidence that can guide effective prevention and intervention strategies in Mandera County.

### 2.5 Conceptual Framework

The conceptual framework illustrates the relationships between the factors that influence codeine misuse and the resulting outcomes within the context of Mandera County. It provides a structured way of understanding how different sets of variables interact to shape substance use behaviours among youth and the wider community. The framework is rooted in public health behavioural theory, which recognises that drug misuse arises from the combined influence of individual, social, economic and environmental determinants rather than from a single cause.

I**ndependent variables** represent the underlying determinants that predispose individuals to codeine misuse. These include socio-demographic characteristics such as age, gender and educational level, which influence patterns of risk exposure and vulnerability. Socio-economic factors—including unemployment, poverty and limited livelihood opportunities—further compound these risks by creating conditions in

which youth may resort to drug use as a coping mechanism. Cultural influences, particularly the widespread acceptance of Miraa chewing and social gatherings that normalise stimulant or sedative use, also shape norms related to substance consumption. Behavioural and environmental factors such as peer associations, exposure to media and the broader community environment complete this set of determinants.

I**ntervening variables** explain the mechanisms through which the independent variables influence patterns of codeine misuse. Peer pressure acts as a critical mediator, especially for adolescents and young adults whose identity and social belonging are closely tied to peer interactions. The availability and affordability of codeine-containing cough syrups further facilitate misuse, particularly in border regions like Mandera where unregulated pharmaceutical flow from neighbouring countries is common. Mental health factors—including stress, depression and frustration—serve as psychological drivers that push individuals toward substance use as a form of relief. The strength of family supervision mediates risk by either buffering or amplifying the effects of peer and community influences.

**The moderating variables** shape the strength and direction of the relationships between the determinants and the outcome. These include regulatory and policy interventions at national and county levels, particularly enforcement mechanisms by the Pharmacy and Poisons Board (PPB). Effective regulation can weaken the link between availability and misuse, whereas weak enforcement amplifies it. Religious and opinion leaders, who hold significant influence in Mandera's socio-cultural landscape, may reinforce protective norms or, in some cases, fail to discourage harmful practices. Community norms also moderate behaviour by determining the

degree to which substance use is tolerated, concealed or resisted within households and social networks.

**Dependent variable** reflects the primary outcome of interest: patterns of codeine misuse and their associated health, social and economic consequences. These consequences may manifest as addiction, school dropout, health complications, family conflict, reduced productivity and increased burden on healthcare systems. The framework illustrates that these outcomes do not occur in isolation but are shaped by a complex interplay of determinants, mediators and moderators operating at multiple levels.

By organising the variables in this manner, the conceptual framework guides the study's analytical approach and clarifies the pathways through which codeine misuse develops. It also highlights areas where interventions may be most effective—such as strengthening regulation, enhancing family support, promoting alternative livelihoods and shifting community norms. Ultimately, the framework underscores the need for a comprehensive, multi-level strategy to address codeine misuse in Mandera County.

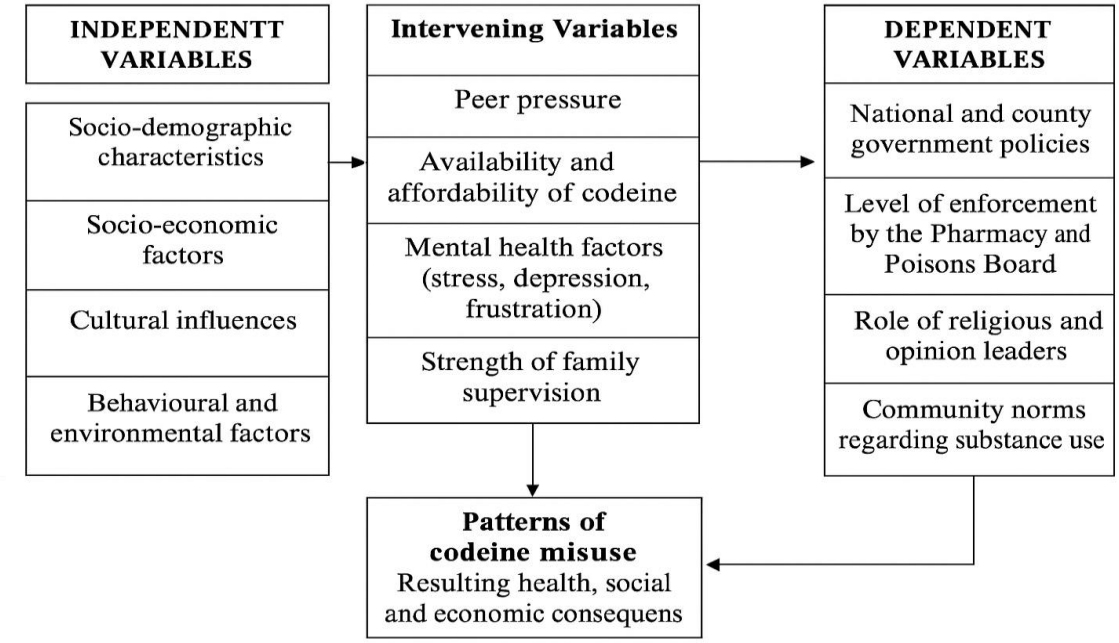


**Figure 1: Conceptual framework**

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# CHAPTER THREE: METHODOLOGY

## 3.0 Introduction

This chapter outlines the methodological framework that guided the conduct of this study. It provides a detailed description of the study location, research design, target population, sampling strategies, data collection tools, procedures, data management and analytical approaches. It further discusses the recruitment and training of field staff, pilot testing of instruments and ethical considerations observed throughout the research process. The methodological approach adopted was guided by the study objectives and the need to ensure that data collected were valid, reliable and reflective of the lived experiences of youth in Mandera East Sub-county.

The chapter begins by presenting the study location, offering insight into the geographical, socio-economic and cultural context within which the research was undertaken. This is essential because contextual realities—including insecurity, poverty, cultural practices and cross-border dynamics—may influence drug and substance use patterns. The research design section provides the justification for adopting a descriptive cross-sectional approach, which was appropriate for assessing the burden and associated factors of codeine misuse at a single point in time.

The chapter further outlines the study population and criteria used to identify eligible participants. Sampling procedures are described in detail to demonstrate how representativeness was achieved. The development and refinement of the research instrument are also explained, followed by the procedures for data collection, processing and analysis. Finally, ethical safeguards implemented to protect participants' rights and welfare are highlighted. Collectively, these components form the methodological foundation upon which the study’s findings are built.

### 3.1 Study Location

The study was conducted in Mandera County, located in the arid and semi-arid North Eastern region of Kenya. Mandera County covers approximately 25,797.70 km² and shares borders with both Somalia and Ethiopia. Mandera Town serves as the county headquarters and is a major urban hub for commerce and cross-border interactions. Administratively, the county comprises six constituencies, seven sub-counties and thirty electoral wards.

According to the 2019 Kenya Population and Housing Census, Mandera County has a total population of 867,457 people. The population is predominantly Somali, represented by the Garre, Murule and Degodia clans. Economic activities are centred around pastoralism, agro-pastoralism, small-scale trading and livestock commerce. The county experiences high levels of poverty, frequent inter-clan conflict and periodic terrorist attacks due to its proximity to Somalia. These conditions contribute to insecurity and limited access to essential services, shaping youth behaviour and vulnerability to substance use.

### 3.2 Study and Target Population

The target population for this study included all residents of Mandera County. Specifically, the study population comprised youths aged 18 to 35 years residing in Mandera East Sub-county. This age group was prioritised because youth are disproportionately affected by drug and substance misuse and represent a critical demographic for public health interventions. Mandera East, with a population of 159,638 people, was selected as the operational site due to its high population density and accessibility.

**Table 1: 2019 Census population of Mandera County.**

| Sub-County | Male | Female | Intersex | Total |
|---|---|---|---|---|
| Mandera Central | 71,688 | 85,527 | 5 | 157,220 |
| Mandera West | 48,166 | 50,130 | 4 | 98,300 |
| Banisa | 78,301 | 74,288 | 9 | 152,598 |
| Kutulo | 35,799 | 36,593 | 2 | 72,394 |
| Lafey | 40,476 | 42,976 | 5 | 83,457 |
| **Mandera East** | **83,538** | **76,095** | **5** | **159,638** |
| Mandera North | 77,008 | 66,835 | 7 | 143,850 |
| **2019 Population** | | | | **867,457** |

### 3.3 Research Design

A descriptive cross-sectional design was utilised for this study. This design was suitable as it allowed for assessment of the prevalence and associated factors of drug and substance use at a single point in time. Cross-sectional surveys are efficient for collecting quantitative data from large populations and are particularly useful for estimating the burden of health-related behaviours in community settings.

### 3.4 Eligibility Criteria

#### 3.4.1 Inclusion Criteria

The study included youth aged 18 to 35 years who were residents of Mandera East Sub-county. Individuals using prescribed medications in higher doses or more frequently than recommended were also included, acknowledging that such behaviours may mirror patterns of misuse relevant to the study.

### 3.4.2 Exclusion Criteria

Respondents who were too ill to participate, those adhering strictly to prescribed medication regimens and individuals with mental health conditions that impaired reliable participation were excluded from the study.

## 3.5 Sample Size Determination

### 3.5.1 Sample Size Calculation

The sample size was determined using Fisher's formula (Fisher et al., 1999). Assuming a prevalence of 50%, a 95% confidence level and a 5% margin of error, the minimum sample size was calculated as 384 respondents. Accounting for a 5% non-response rate, the final adjusted sample size was 405 participants.

$$n = \frac{Z^2\, p(1-p)}{d^2}$$

Where;

n= is the minimum calculated sample size for populations greater than 10,000

Z= Standard errors from mean corresponding to the 95% confidence level is 1.96

P= the target prevalence, assumed 50%, p=0.5

d= the level of statistical significance (allowable error / precision) of 5%, d=0.05

Thus,

$$n = \frac{1.96^2 x\ 0.5(1-0.5)}{0.05^2} \qquad (1)$$

$$n = \frac{3.8416 \times 0.5 \times 0.5}{0.0025} = \frac{0.9604}{0.0025} = 384.16 \sim 385 \qquad (2)$$

Allowing for a non-response rate of 5% gave a final adjusted sample size of 405 as below

$$n = 384 \times \frac{105}{100} = 404.25 \sim 405 \qquad (3)$$

Therefore, the study participants comprised 405 participants from Mandera east. Ward.

### 3.6 Sampling Procedure

A mixed sampling approach was adopted. Mandera East Sub-county was purposively selected due to its large youth population and suspected high burden of substance misuse. The sub-county's five wards were represented using simple random sampling. In the absence of ward-level population data, a uniform distribution assumption was applied to ensure equal representation across all wards.

**Table 2: Mandera East Population by Wards**

| Sub-county | No. | Wards | 2019 Population | Sample size |
|---|---|---|---|---|
| **Mandera East** | 1 | Arabia | 31,928 | 81 |
| | 2 | Libehia | 31,928 | 81 |
| | 3 | Khalalio | 31,928 | 81 |
| | 4 | Neboi | 31,928 | 81 |
| | 5 | Township | 31,928 | 81 |
| **Total** | | | **159,640** | **405** |

Source: 2019 Kenya Population and Housing census

### 3.7 Data Collection, Management and Analysis

Data collection involved preparatory steps such as tool development, recruitment and training of research assistants and pre-testing. Data were collected through interviewer-administered questionnaires, ensuring clarity and comprehension among participants. Completed questionnaires were reviewed for accuracy before being coded and entered into SPSS version 23. Data cleaning was performed to identify inconsistencies and missing values. Univariate analysis was conducted to generate descriptive statistics, presented using frequencies, percentages, tables and graphs.

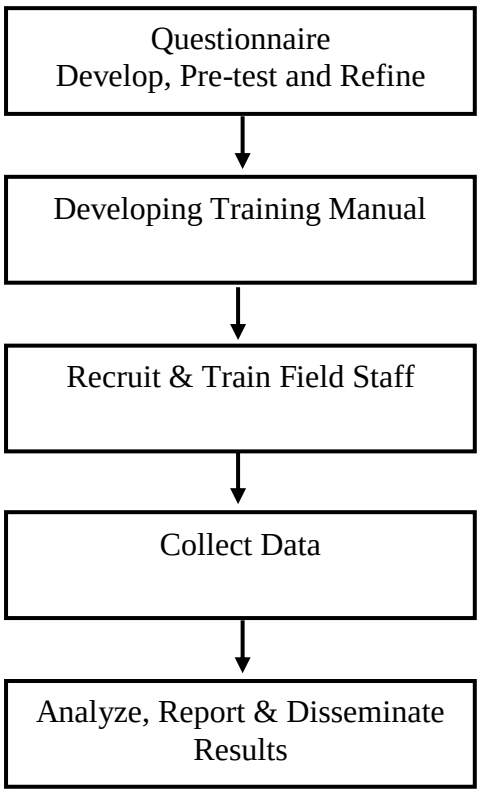



**Figure 2: Development of study instrument**

### 3.8 Data Collection Instrument

The primary data collection tool was an interviewer-administered questionnaire developed specifically for this study. It covered demographic characteristics, socio-economic factors, patterns of substance use and perceptions. The questionnaire underwent pre-testing to assess clarity and appropriateness. Feedback informed revisions, ensuring the tool adequately addressed the study objectives.

### 3.9 Recruitment, Selection and Training of Field Staff

Research assistants were recruited based on their language proficiency, cultural familiarity and knowledge of the local environment. Training sessions covered study objectives, questionnaire content, interviewing techniques and ethical guidelines. The training ensured consistency and accuracy during data collection.

### 3.10 Pre-testing of Tool

Pre-testing involved administering the questionnaire to a small sample outside the study wards. This helped identify ambiguous questions, inappropriate response options and logistical challenges. Adjustments were made to improve clarity and alignment with study objectives.

### 3.11 Data Types and Sources

Primary data were collected directly through interviewer-administered questionnaires, chosen to accommodate high illiteracy levels in the area. Simple random sampling enhanced the representativeness of the findings and reduced selection bias.

### 3.12 Data Processing, Analysis and Presentation

Data were analysed using SPSS version 23. Descriptive statistics such as frequencies, proportions and percentages were generated. Results were presented using tables, figures and narrative descriptions.

### 3.13 Ethical Considerations

Ethical approval was obtained from the Moi Teaching and Referral Hospital/Moi University Institutional Research and Ethics Committee (Approval Ref: IREC/2020/39). Additional permits were obtained from NACOSTI and the Mandera County Government. Informed consent was obtained from all participants, who were assured of confidentiality, anonymity and voluntary participation.

# CHAPTER FOUR: RESULTS

## 4.0 Introduction

This chapter presents the findings of the study based on data collected from 405 youths in Mandera East Sub-county. The results are organised to reflect the study objectives and provide a clear understanding of the patterns and determinants of codeine-containing drug use among young people in the area. The chapter begins with a summary of the pilot study and the overall response rate achieved, followed by the demographic and socio-economic characteristics of the participants.

The subsequent sections present the results according to the study objectives. The first section outlines the prevalence and patterns of codeine-containing drug misuse, including the specific types of drugs used and the frequency of their consumption. The second section highlights the factors associated with the use of codeine-containing drugs, examining the influence of demographic, socio-economic, social and cultural characteristics. The findings are presented in narrative form and supported with tables and figures to enhance interpretation and clarity.

## 4.1 Pilot Study and Final Study Response Rate

### 4.1.1 Pilot Study

The recruitment and selection of research assistants—based on their prior experience conducting similar surveys in Mandera County—was undertaken on 25th August 2020. Training sessions were conducted on 26th August 2020, after which pilot testing took place on the 27th and 28th of August 2020. The purpose of the pilot study was to evaluate the clarity, reliability and internal consistency of the questionnaire prior to deployment in the main study.

The pilot findings indicated that the questionnaire was valid and reliable for measuring the intended constructs. Internal consistency was assessed using Cronbach's Alpha coefficient, which provides an estimate of reliability by measuring how closely related a set of items are as a group. Cronbach's Alpha values range from 0 to 1, with values above 0.7 generally considered acceptable for research instruments (Taber, 2018).

In the current study, reliability analysis was conducted for each major scale corresponding to the study objectives. The coefficients obtained exceeded the recommended threshold of 0.7 (Mohajan, 2017), indicating that the scales would produce consistent results if the study were replicated. Table 3 summarises the reliability coefficients.

**Table 3: Cronbach's reliability coefficients.**

| No | Scale | Cronbach's Alpha | Number of Items |
|---|---|---|---|
| **1** | Demographic factors | 0.739 | 7 |
| **2** | Economic factors | 0.825 | 11 |
| **3** | Social-cultural factors | 0.875 | 17 |
| **4** | Overall | 0.891 | 35 |

### 4.1.2 Final Study Response Rate

Data collection was carried out in September 2020 after confirming that the questionnaire was clear, consistent and suitable for field administration. Although the calculated minimum sample size was 385—later adjusted upward by 5% to 405 to account for possible non-response—the study successfully reached all 405 targeted youths. This yielded a 100% response rate. All questionnaires were fully completed, verified for completeness and subsequently analysed. Such a complete response strengthened the representativeness and reliability of the study findings.

## 4.2 Demographic and Socio-economic Characteristics of Respondents

### 4.2.1 Demographic Characteristics of Respondents

Table 4 below presents the demographic characteristics of the 405 respondents. Males formed the overwhelming majority, accounting for 388 (95.8%), while females constituted only 17 (4.2%). The mean age of the respondents was 26.3 years (±4.3), with the largest proportion falling within the 24–26-year age group (26.2%). The smallest age group was 33–35 years at 7.9%.

With regard to marital status, slightly more than half of the respondents were single (52.8%), while 121 (29.9%) were married. A combined 16.3% were divorced, separated or widowed. Educational attainment varied, with 101 (25.0%) reporting no formal schooling, 99 (24.4%) having primary education and a notable 171 (42.2%) attaining secondary education. Only 34 (8.4%) had progressed to college or university. As expected in Mandera County, almost all respondents identified as Muslims (99.5%).

**Table 4: Demographic characteristics**

| Characteristics | Category | Frequency | Percent (%) |
|---|---|---|---|
| Sex | Male | 388 | 95.8 |
| | Female | 17 | 4.2 |
| | **Total** | **405** | **100.0** |
| Age category | 18–20 | 44 | 10.9 |
| | 21–23 | 69 | 17.0 |
| | 24–26 | 106 | 26.2 |
| | 27–29 | 79 | 19.5 |
| | 30–32 | 75 | 18.5 |
| | 33–35 | 32 | 7.9 |
| | **Total** | **405** | **100.0** |
| Marital status | Single | 214 | 52.8 |
| | Married | 121 | 29.9 |
| | Divorced | 52 | 12.9 |
| | Separated | 15 | 3.7 |
| | Widowed | 3 | 0.7 |
| | **Total** | **405** | **100.0** |
| Religion | Christian | 2 | 0.5 |
| | Islam | 403 | 99.5 |
| | **Total** | **405** | **100.0** |
| Highest level of education | None | 101 | 25.0 |

| | | | |
|---|---|---|---|
| | Primary | 99 | 24.4 |
| | Secondary | 171 | 42.2 |
| | College/University | 34 | 8.4 |
| | **Total** | **405** | **100.0** |
| Status of education | Never been to school | 97 | 24.0 |
| | Ongoing | 52 | 12.8 |
| | Dropped out | 103 | 25.4 |
| | Completed | 153 | 37.8 |
| | **Total** | **405** | **100.0** |

### 4.2.2 socio-economic characteristics of the respondents

Table 5 summarises the socio-economic characteristics of the respondents. Employment opportunities were limited, with 164 (40.5%) reporting unemployment and 41 (10.1%) identifying as students. A substantial proportion were self-employed (42.0%), engaging mainly in small business enterprises. Business was reported as the main source of income for 116 respondents (28.6%), followed by farming at 16.8%. Those without stable employment relied heavily on contributions (25.2%) or remittances (8.1%). Monthly earnings varied widely: 18.3% earned above KSh 16,000, whereas 18.1% earned below KSh 3,000. These indicators reflect the limited economic opportunities available to youth in Mandera East.

**Table 5: Socio-economic Characteristics of Respondents** (n = 405)

| Characteristics | Category | Frequency | Percent (%) |
|---|---|---|---|
| Occupation | Unemployed | 164 | 40.5 |
| | Self-employed | 170 | 42.0 |
| | Employed | 30 | 7.4 |
| | Student | 41 | 10.1 |
| | **Total** | **405** | **100.0** |
| Main source of income | Employment | 32 | 7.9 |
| | Business | 116 | 28.6 |
| | Farming | 68 | 16.8 |
| | Donations | 102 | 25.2 |
| | Remittances | 33 | 8.1 |
| | No income | 54 | 13.3 |
| | **Total** | **405** | **100.0** |
| Estimated monthly income (KES) | No income | 25 | 6.2 |
| | Below 2,999 | 48 | 11.9 |
| | 3,000–5,999 | 66 | 16.3 |
| | 6,000–8,999 | 45 | 11.1 |
| | 9,000–10,999 | 61 | 15.1 |
| | 11,000–13,999 | 49 | 12.1 |
| | 14,000–15,999 | 37 | 9.1 |
| | Above 16,000 | 74 | 18.3 |
| | **Total** | **405** | **100.0** |

### 4.3 Commonly Used Codeine-containing Drugs, Patterns and Sources

This section presents results relating to the types of codeine-containing medications used by youths in Mandera East, the perceived reasons underlying their use and the pathways through which youths are introduced to these substances. Understanding these aspects is essential in interpreting local drug-use dynamics and informing targeted prevention strategies.

#### 4.3.1 Lifetime Use of Codeine-containing Drugs

To assess lifetime exposure to codeine-containing medicines, respondents were provided with a list of 20 commonly available products and asked to select all those they had ever used. All listed drugs were confirmed to be in circulation within the county, though with varying levels of use. The most frequently used drugs were Betapyne (16.0%), Codeine Phosphate Linctus (13.9%), Benylin with Codeine (9.4%) and Biocof Linctus 100 ml (9.4%). These findings highlight the widespread accessibility of both analgesic and cough-syrup formulations containing codeine.

**Table 6: Codeine-containing Drugs Used in Mandera**

| No. | Codeine-containing drug | Yes (%) |
|---|---|---|
| **1** | Betapyne | 16.0 |
| **2** | Myprodol Capsules | 7.3 |
| **3** | Biocof Linctus 100ml | 9.4 |
| **4** | Biocof Forte Expectorant | 8.2 |
| **5** | Bronkof Syrup | 7.1 |
| **6** | Fopyn Tablets | 8.2 |
| **7** | Codelzine Cough Linctus | 4.7 |
| **8** | DF 118 | 0.3 |
| **9** | Kofed Compound Linctus | 0.6 |
| **10** | Parcoten Tablets | 1.1 |
| **11** | Actifed Dry Cough & Cold Syrup | 2.9 |
| **12** | Pynstop Tablets | 0.8 |
| **13** | Benylin with Codeine | 9.4 |
| **14** | Coscof C Linctus | 2.3 |
| **15** | Coscof CD Linctus | 2.0 |
| **16** | Codeine Phosphate Linctus | 13.9 |
| **17** | DHC 30 Tablets | 0.2 |
| **18** | Paraco-Denk Suppositories | 0.2 |
| **19** | Multipein Tablets | 0.8 |
| **20** | Bronyl Syrup | 1.5 |

### 4.3.2 Perceived Reasons for Drug Use

Respondents were also asked to indicate what they believed motivated youths to use codeine-containing drugs and other substances. Their responses—whether or not they personally used the drugs—provide insight into community perceptions of drug-use drivers.

The most frequently cited reason was relieving stress (49.4%), followed by peer pressure (26.7%) and relaxation (14.8%). Smaller proportions identified coping with family problems, poverty or academic enhancement as contributing factors. These findings indicate that psychosocial pressures and social influences are key drivers of substance use in this population.

**Table 7: Top Reasons for Drug Use**

| Reason for drug use | Frequency | Percent (%) |
|---|---|---|
| **To relax** | 60 | 14.8 |
| **To relieve stress** | 200 | 49.4 |
| **To cope with family problems** | 25 | 6.3 |
| **Peer pressure** | 108 | 26.7 |
| **Excess pocket money** | 1 | 0.2 |
| **To enhance academic performance** | 4 | 1.0 |
| **Source of income** | 1 | 0.2 |
| **Poverty** | 5 | 1.2 |
| **I don't know** | 1 | 0.2 |
| Total | **405** | **100.0** |

### 4.3.3 Introduction to Drug Use

To explore how youths are typically initiated into drug use—while minimising discomfort or fear of disclosure—respondents were asked to answer based on their observations rather than personal experience. The majority (79.8%) indicated that friends are the main source of introduction, while relatives accounted for an additional 12.1%. This underscores the strong influence of social networks and family environments in shaping early exposure to drugs.

**Table 8: Introduction to Drug Use**

| Who introduced youths to drugs? | Frequency | Percent (%) |
|---|---|---|
| **Friend** | 323 | 79.8 |
| **Parent** | 3 | 0.7 |
| **Sibling** | 12 | 3.0 |
| **Relative** | 49 | 12.1 |
| **Teacher** | 1 | 0.2 |
| **I don't know** | 17 | 4.2 |
| Total | **405** | **100.0** |

### 4.3.4 Sources of Drugs Accessed by Youths

To better understand the accessibility of codeine-containing drugs and other substances, respondents were asked to indicate the places where youths most commonly obtain these products within Mandera East. As shown in **Figure 3**, the majority of respondents (39.3%) cited Miraa outlets as the primary access points. This finding suggests that Miraa-selling venues may also function as informal drug distribution sites, reinforcing the close association between Miraa chewing and the misuse of codeine-containing preparations.

A further 23.5% of respondents identified chemists and pharmacies as common sources, highlighting the ease with which codeine-based medicines can be purchased over the counter despite existing regulatory restrictions. Smaller proportions mentioned shops, peers and informal vendors.

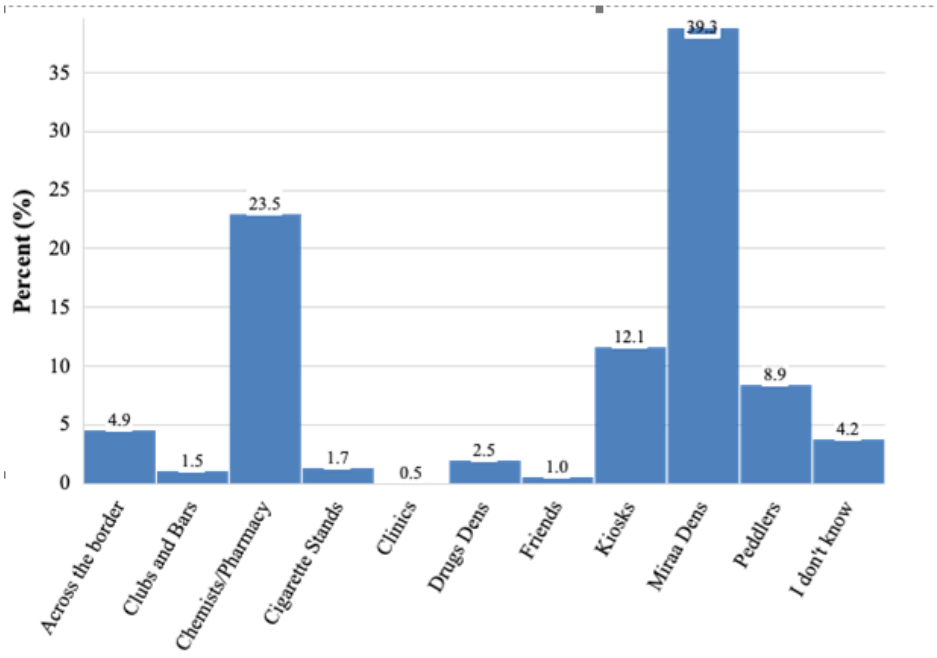



**Figure 3: Sources from Which Youths Access Drugs**

### 4.3.5 Locations Where Drugs Are Consumed

Respondents who acknowledged having consumed codeine-containing drugs were asked to state where such use typically occurred. As summarised in **Table 9**, the majority (50.4%) reported consuming these drugs in secluded places together with friends**,** indicating a strong social element in consumption patterns. An additional 17.0% used drugs alone in seclusion, while 15.6% consumed them at home.

These findings suggest that much of the drug use takes place in private or hidden settings, which may hinder detection by parents, authorities and community leaders. They also underscore the role of peer networks in facilitating both access and use.

**Table 9: Locations at Which Drugs Are Taken**

| Location | Frequency | Percent (%) |
|---|---|---|
| **At home** | 63 | 15.6 |
| **Alone in a secluded place** | 69 | 17.0 |
| **In a secluded place with friends** | 204 | 50.4 |
| **Not applicable** | 35 | 8.6 |
| **I don't know** | 34 | 8.4 |
| Total | **405** | **100.0** |

### 4.3.6 Age Patterns in Drug Use

The study further sought to determine which age groups exhibited higher rates of substance use, particularly the use of codeine-containing drugs. Responses revealed that the 24–26-year age group had the highest reported usage, making them the most affected demographic within Mandera East.

This observation is illustrated in Figure 4, which shows the distribution of substance use across the different age categories. The findings suggest that early to mid-twenties represent a critical period for intervention, given the heightened vulnerability of youths at this stage.

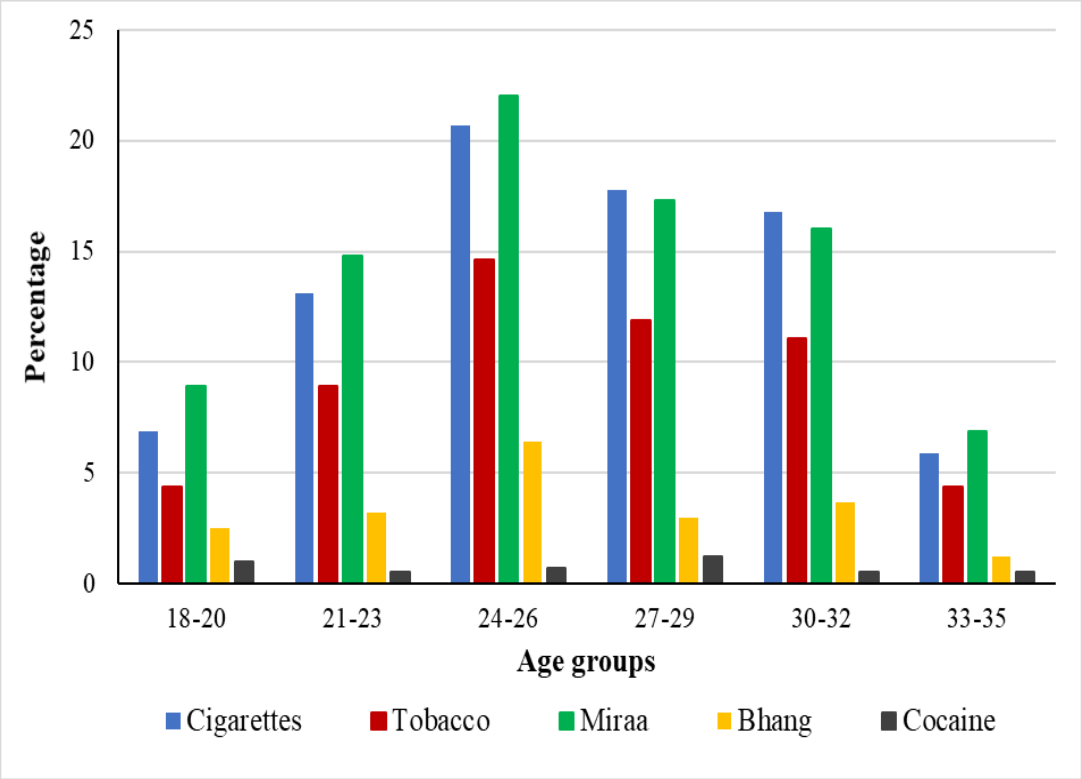



**Figure 4: Age Group and Substance Use**

## 4.4 Factors associated with drug use

### 4.4.1 Cultural and religious factors

Respondents were asked if they used Miraa and 65.4% (265) of those surveyed said they did. Given the relationship between Miraa chewing and codeine-containing drug usage, the study attempted to determine whether Somali culture and religion influence Miraa chewing among community youths. The majority of respondents (67.7%) stated that culture does not and 90.1% stated that Islam as a religion does not advocate for drug usage or Miraa chewing. This is summarized in Table 10.

**Table 5: Cultural and religious factors**

| Question | Response | Frequency | Percent (%) |
|---|---|---|---|
| **Do you chew Miraa?** | Yes | 265 | 65.4 |
| | No | 140 | 34.6 |
| | Total | 405 | 100.0 |
| **Does your culture contribute to chewing of Miraa/use of codeine-containing drugs?** | Yes | 117 | 28.9 |
| | No | 274 | 67.7 |
| | I don't know | 14 | 3.5 |
| | Total | 405 | 100.0 |
| **Who is allowed?** | Non-response | 301 | 74.3 |
| | Men | 51 | 12.6 |
| | Women | 1 | 0.2 |
| | Men and women | 11 | 2.7 |
| | Youth above 18 | 7 | 1.7 |
| | Everybody | 34 | 8.4 |
| | Total | 405 | 100.0 |
| **In which cultural occasions is Miraa chewing allowed** | I don't know | 299 | 73.8 |
| | Wedding | 2 | 0.5 |
| | Circumcision | 1 | 0.2 |
| | Holidays | 2 | 0.5 |
| | Anytime | 101 | 24.9 |
| | Total | 405 | 100.0 |
| **Does your religion allow for use of Miraa/codeine-containing drugs?** | Yes | 17 | 4.2 |
| | No | 365 | 90.1 |
| | Controversial | 13 | 3.2 |
| | I don't know | 10 | 2.5 |
| | Total | 405 | 100.0 |

### 4.4.2 Person youth lived with

Who the youth lived with seems to influence their drug use. Nineteen percent (19.3%) of respondents lived alone, while the remaining 66.2% lived with one or both parents. Table 11 depicts a cross-tabulation of who these youths lived with and if they used drugs or substances. Except for bhang, people who lived alone or with parents took drugs at a higher rate than those who did not.

**Table 6: Cross-tabulation of substance use and the person the youth lived with**

| I live with? | Cigarette | | Tobacco | | *Miraa* | | Bhang | |
|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No |
| I live alone | 15.3 | 2.0 | 9.8 | 7.6 | 14.4 | 2.9 | 2.9 | 14.4 |
| Father/mother or both | 44.5 | 13.3 | 32.7 | 25.1 | 49.3 | 8.5 | 10.9 | 46.8 |
| Stepfather/stepmother | 3.1 | 0.2 | 0.8 | 2.4 | 2.9 | 0.4 | 0.9 | 2.4 |
| Brother(s)/sister(s) | 1.3 | 0.0 | 0.4 | 0.9 | 1.3 | 0.0 | 0.4 | 0.9 |
| Grandmother/grandfather | 2.8 | 0.0 | 2.2 | 0.7 | 2.8 | 0.0 | 1.5 | 1.3 |
| Other relatives/family | 3.6 | 1.1 | 2.4 | 2.2 | 3.8 | 0.9 | 1.1 | 3.6 |
| Non-relatives | 2.4 | 0.2 | 1.3 | 1.3 | 2.7 | 0.0 | 0.2 | 2.4 |

### 4.4.3 Availability of money

The availability of money from numerous sources aided in the ease of access to medicines. Figure 5 illustrates the reported sources of money for drugs, which included the selling of drugs (peddling) by 42.8% of respondents, relatives (25.8%) and parents (20.3%).

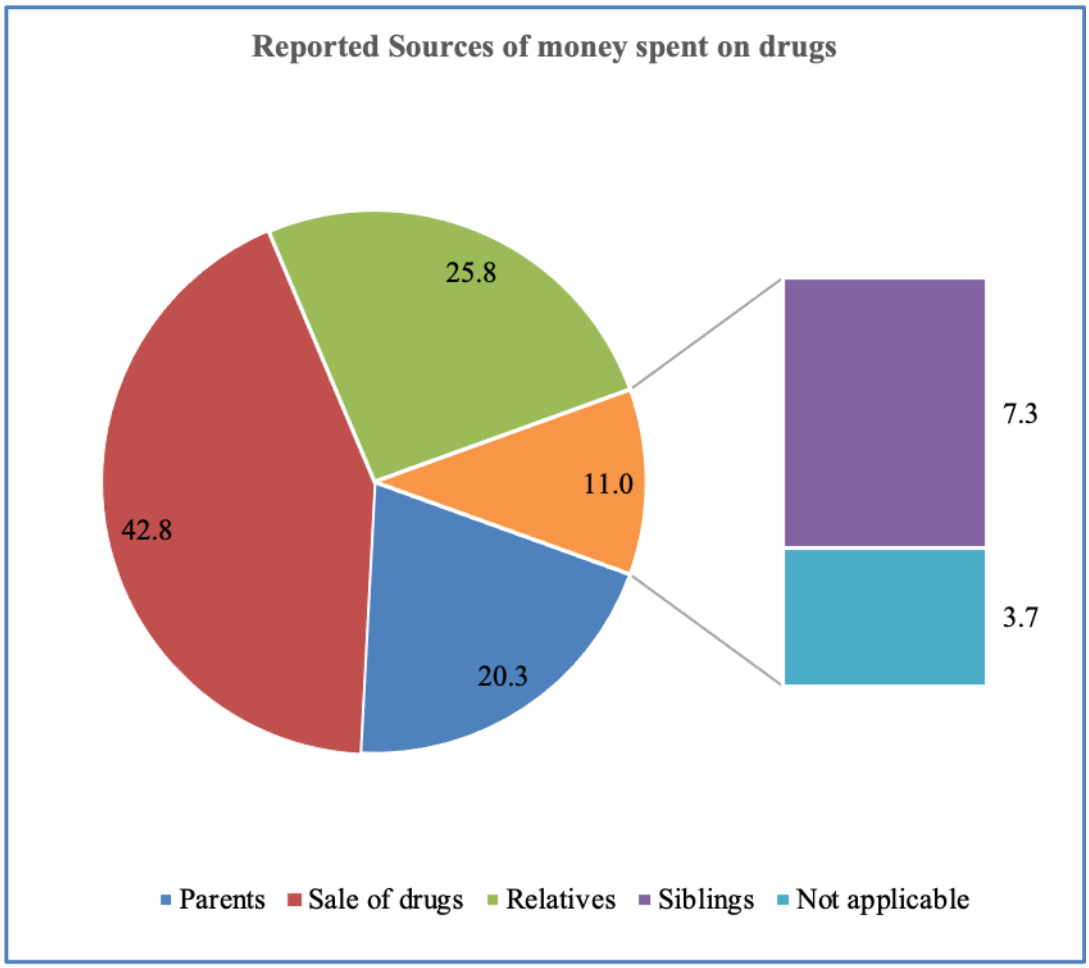



**Figure 3: Sources of money spent on drugs**

### 4.4.4 Social factors

The major social factors contributing to drug use are peer pressure as reported by 16.9% of respondents, unemployment (13.1%), poor parenting (11.6%), accessibility of drugs (11.5%), domestic problems (11.1%) and poverty (10.3%). Figure 6 shows the main factors participants mentioned contribute to drug use

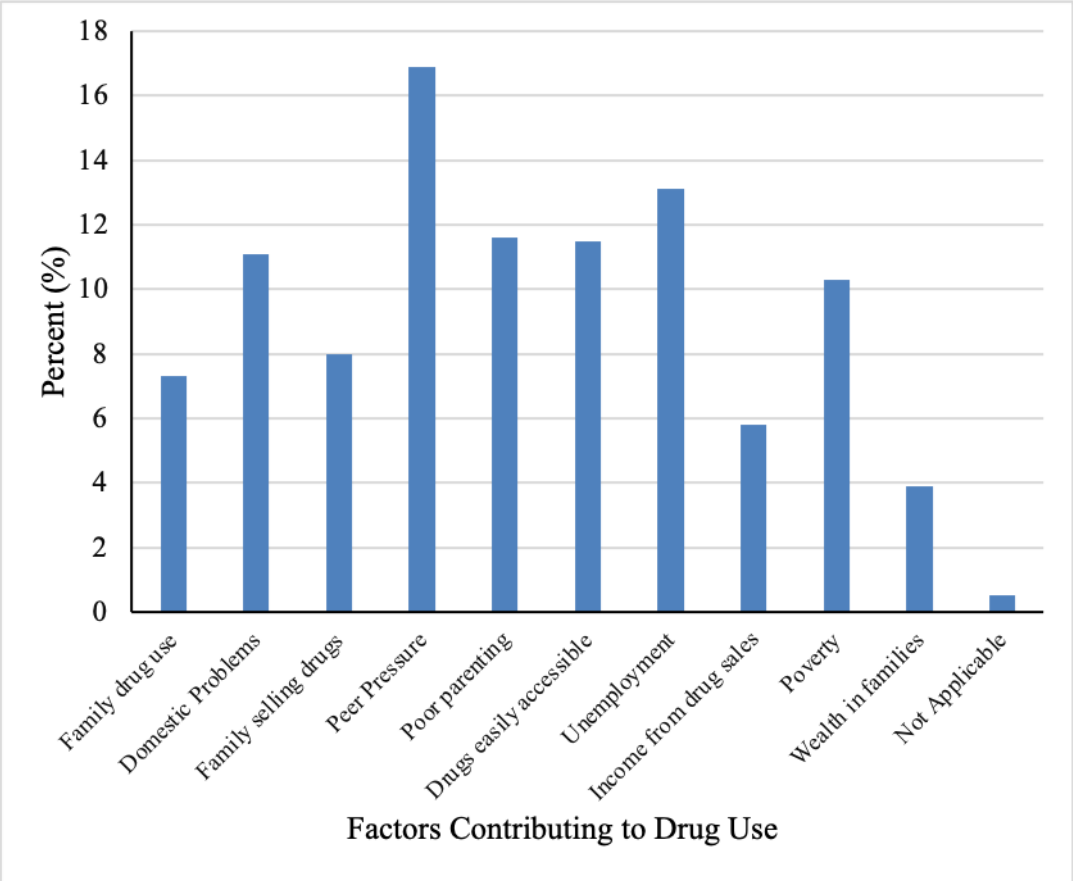



**Figure 4: Major factors contributing to drug use**

### 4.5 Relationship between Study Variables

The study also conducted odds ratios to determine the relationship between various factors and the use of codeine-containing drugs among youths. The results are shown in Table 12. The results indicate that the group with higher odds is more likely to use codeine-containing drugs.

**Table 7: Odds Ratios for relationship between various factors with the use of codeine-containing drugs among youths.**

| Characteristic | Odds Ratio (OR) | 95% Lower Confidence Interval | 95% Upper Confidence Interval | *p*-value |
|---|---|---|---|---|
| **Age Group** | | | | |
| **(18-26)** | 1 | | | |
| **27-35** | 0.*694* | 0.188 | 1.278 | 0.007 |
| **Family drug use** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 1.363 | 0.561 | 3.394 | 0.001 |
| **Domestic Problems** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 2.490 | 0.894 | 7.274 | 0.086 |
| **Sex** | | | | |
| **(Male)** | 1 | | | |
| **Female** | 0.953 | 0.516 | 1.764 | 0.049 |
| **Family selling drugs** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 4.451 | 1.272 | 16.457 | 0.022 |
| **Peer Pressure** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 1.953 | 0.516 | 2.764 | 0.000 |
| **Poor parenting** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 1.089 | 0.989 | 3.001 | 0.080 |
| **Drugs easily accessible** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 5.286 | 1.390 | 9.568 | 0.017 |
| **Unemployment** | | | | |
| **(Employed)** | 1 | | | |
| **Unemployed** | 1.411 | 0.176 | 1.988 | 0.134 |
| **Income from drug sales** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 1.121 | 0.990 | 1.938 | 0.134 |
| **Poverty** | | | | |
| **(No)** | 1 | | | |
| **Yes** | 2.334 | 0.566 | 3.655 | 0.046 |

### 4.6 Factors Associated with Drug Use

This section presents the findings addressing the second objective of the study, which sought to identify the socio-cultural, economic and environmental factors associated with the use of codeine-containing drugs among youths in Mandera East Sub-county. The results are organised thematically to highlight cultural and religious influences, household living arrangements, financial access, and broader social drivers of drug use. Inferential statistics (odds ratios) are also presented to show the strength of association between selected factors and drug-use behaviour.

#### 4.6.1 Cultural and Religious Factors

The study first explored whether cultural norms or religious beliefs contribute to the use of Miraa or codeine-containing drugs among youths. A total of 65.4% (265) of respondents reported chewing Miraa, highlighting its widespread social acceptance. However, when asked whether Somali culture promotes Miraa chewing or the use of codeine-based drugs, 67.7% stated that culture does not encourage these practices.

Regarding religion, an overwhelming 90.1% affirmed that Islam does not allow the use of Miraa or codeine-containing drugs, suggesting that drug use persists despite religious prohibitions.

Further probing revealed that most respondents (74.3%) did not identify any specific group culturally permitted to chew Miraa. Among those who did, men were the most frequently mentioned group (12.6%).

Table 10 summarises responses relating to cultural and religious influences.

**Table 13: Cultural and Religious Factors**

| Question | Response | Frequency | Percent (%) |
|---|---|---|---|
| Do you chew Miraa? | Yes | 265 | 65.4 |
| | No | 140 | 34.6 |
| | **Total** | **405** | **100.0** |
| Does your culture contribute to Miraa/codeine use? | Yes | 117 | 28.9 |
| | No | 274 | 67.7 |
| | I don't know | 14 | 3.5 |
| | **Total** | **405** | **100.0** |
| Who is culturally allowed? | Non-response | 301 | 74.3 |
| | Men | 51 | 12.6 |
| | Women | 1 | 0.2 |
| | Men and women | 11 | 2.7 |
| | Youth above 18 | 7 | 1.7 |
| | Everybody | 34 | 8.4 |
| | **Total** | **405** | **100.0** |
| Cultural occasions allowing Miraa | I don't know | 299 | 73.8 |
| | Wedding | 2 | 0.5 |
| | Circumcision | 1 | 0.2 |
| | Holidays | 2 | 0.5 |
| | Anytime | 101 | 24.9 |
| | **Total** | **405** | **100.0** |
| Does your religion allow use of Miraa/codeine? | Yes | 17 | 4.2 |
| | No | 365 | 90.1 |
| | Controversial | 13 | 3.2 |
| | I don't know | 10 | 2.5 |
| | **Total** | **405** | **100.0** |

### 4.6.2 Household Living Arrangement

Living arrangements were examined to assess their influence on substance use. About **19.3%** of respondents lived alone, while **66.2%** lived with one or both parents.

Table 11 shows a cross-tabulation between who the youth lived with and their use of cigarettes, tobacco, Miraa and bhang. The results show that individuals living alone or with parents reported higher usage across most substances, except for bhang, where use patterns were more evenly distributed.

**Table 14: Cross-tabulation of Substance Use by Living Arrangement**

| Living Arrangement | Cigarette Yes | Cigarette No | Tobacco Yes | Tobacco No | Miraa Yes | Miraa No | Bhang Yes | Bhang No |
|---|---|---|---|---|---|---|---|---|
| **I live alone** | 15.3 | 2.0 | 9.8 | 7.6 | 14.4 | 2.9 | 2.9 | 14.4 |
| **Father/mother/ both** | 44.5 | 13.3 | 32.7 | 25.1 | 49.3 | 8.5 | 10.9 | 46.8 |
| **Stepfather/mother** | 3.1 | 0.2 | 0.8 | 2.4 | 2.9 | 0.4 | 0.9 | 2.4 |
| **Siblings** | 1.3 | 0.0 | 0.4 | 0.9 | 1.3 | 0.0 | 0.4 | 0.9 |
| **Grandparents** | 2.8 | 0.0 | 2.2 | 0.7 | 2.8 | 0.0 | 1.5 | 1.3 |
| **Other relatives** | 3.6 | 1.1 | 2.4 | 2.2 | 3.8 | 0.9 | 1.1 | 3.6 |
| **Non-relatives** | 2.4 | 0.2 | 1.3 | 1.3 | 2.7 | 0.0 | 0.2 | 2.4 |

### 4.6.3 Availability of Money

Access to money whether through income, remittances or drug peddling—was also assessed as a potential contributor to drug use. As shown in Figure 5, the leading source of money used to purchase drugs was drug peddling (42.8%), followed by relatives (25.8%) and parents (20.3%).

This indicates that some youths actively participate in small-scale drug distribution, using the proceeds to sustain their own consumption.

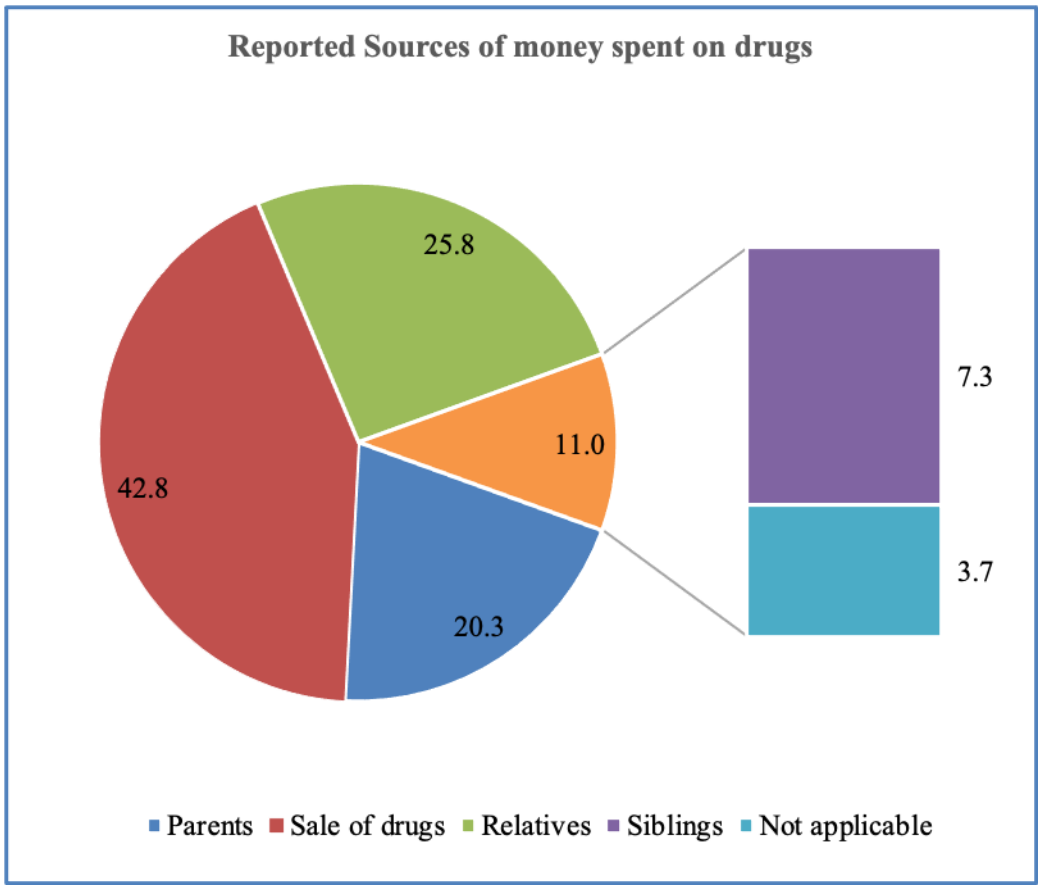



**Figure 7: Sources of Money Used to Purchase Drugs**

### 4.6.4 Social Factors Contributing to Drug Use

Respondents identified a number of social challenges that contribute to drug use among youths. The most prominent were peer pressure (16.9%), unemployment (13.1%), poor parenting (11.6%), easy accessibility of drugs (11.5%), domestic problems (11.1%) and poverty (10.3%).

These findings underscore the interplay between social vulnerability and substance use.

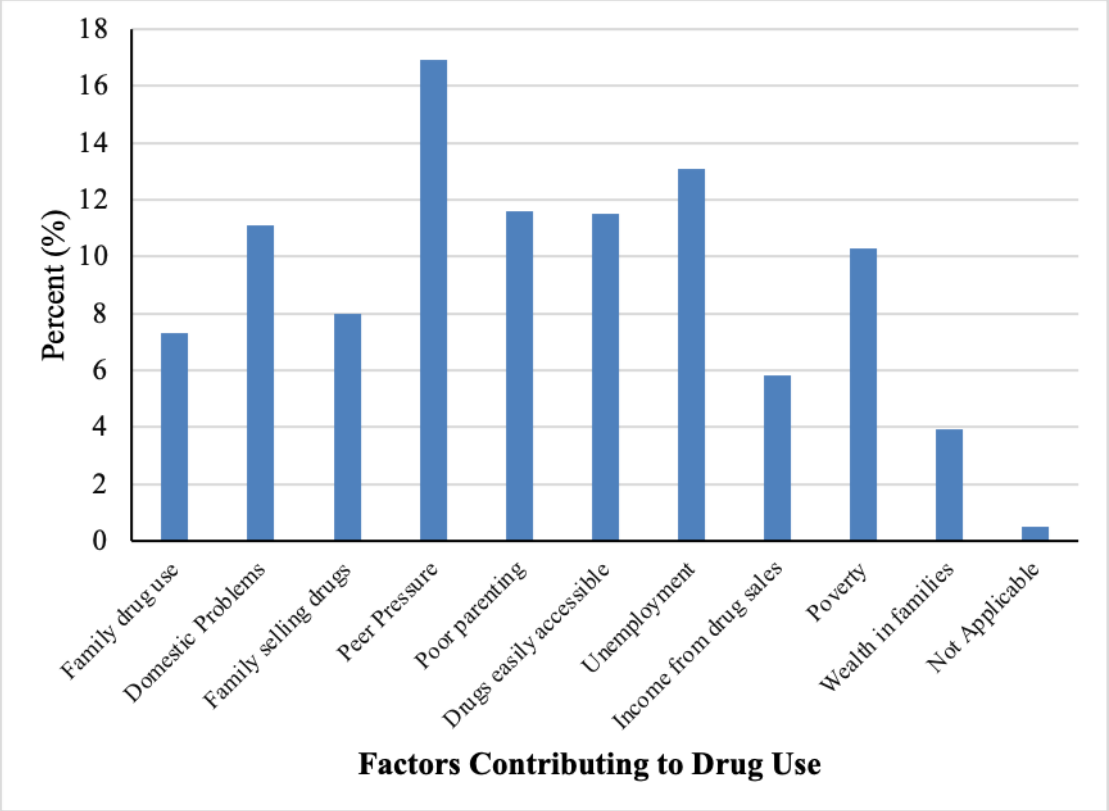



**Figure 8: Social Factors Contributing to Drug Use**

### 4.7 Relationship Between Study Variables

To further examine the associations between selected factors and the use of codeine-containing drugs, odds ratios (ORs) were computed. Table 12 presents the results. Factors with ORs greater than 1 indicate higher odds of codeine use among the exposed group.

Key findings include:

- Family selling drugs (OR = 4.451, p = 0.022) greatly increased the likelihood of codeine use.
- Drug accessibility (OR = 5.286, p = 0.017) was a strong predictor.
- Peer pressure (OR = 1.953, $p < 0.001$) significantly influenced use.
- Poverty (OR = 2.334, p = 0.046) was also associated with higher odds of use.

**Table 15: Odds Ratios for Factors Associated with Codeine Use**

| Characteristic | OR | 95% CI Lower | 95% CI Upper | p-value |
|---|---|---|---|---|
| Age group (27–35) | 0.694 | 0.188 | 1.278 | 0.007 |
| Family drug use (Yes) | 1.363 | 0.561 | 3.394 | <0.001 |
| Domestic problems (Yes) | 2.490 | 0.894 | 7.274 | 0.086 |
| Sex (Female) | 0.953 | 0.516 | 1.764 | 0.049 |
| Family selling drugs (Yes) | 4.451 | 1.272 | 16.457 | 0.022 |
| Peer pressure (Yes) | 1.953 | 0.516 | 2.764 | <0.001 |
| Poor parenting (Yes) | 1.089 | 0.989 | 3.001 | 0.080 |
| Drug accessibility (Yes) | 5.286 | 1.390 | 9.568 | 0.017 |
| Unemployment (Yes) | 1.411 | 0.176 | 1.988 | 0.134 |
| Income from drug sales (Yes) | 1.121 | 0.990 | 1.938 | 0.134 |
| Poverty (Yes) | 2.334 | 0.566 | 3.655 | 0.046 |

# CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 5.0 Introduction

This chapter presents a comprehensive discussion of the major findings from Chapter Four and interprets them in relation to existing empirical evidence and the study's specific objectives. The discussion seeks to explain not only what the study found but also why these findings matter in the context of public health and youth substance use in Mandera County. The chapter further synthesises the implications of the findings into clear conclusions that correspond to each research objective. Based on these conclusions, evidence-driven recommendations are proposed for relevant stakeholders at both national and county levels. Finally, the chapter highlights gaps that future studies should explore to broaden understanding of codeine misuse among Kenyan youth.

## 5.1 Discussion

### 5.1.1 Socio-economic and demographic characteristics

The demographic profile of respondents revealed a predominantly male, Somali and Muslim youth population. While this homogeneity was anticipated given the socio-cultural composition of Mandera County, it holds analytical significance because it shapes the context within which drug-use behaviours occur. Rather than acting as direct determinants of codeine use, these demographic attributes establish a shared cultural framework that influences social norms, peer interactions and identity formation among youth.

The concentration of respondents within the 24–26 age bracket is notable. This life stage typically involves heightened socio-economic expectations, including the pressure to secure employment, begin families and establish independence. When such expectations are unmet due to unemployment, financial instability or limited mobility the resulting frustration and stress may predispose youth to substance use as a coping strategy. This aligns with Lee et al. (2016), who describe economic hardship and psychological stressors as significant contributors to drug experimentation and continued use.

Unemployment emerged as a dominant socio-economic factor, with many youths reporting a lack of stable income or dependence on donations. Such financial precarity often exacerbates feelings of hopelessness or social exclusion, which may push young people toward maladaptive coping mechanisms, including drug use. Low educational attainment, especially concentrated at the primary school level, further compounds this vulnerability. Limited education often restricts employment opportunities, reduces health literacy and weakens decision-making capacity regarding drug use. Studies from similar low-resource contexts indicate that youth with limited education are more likely to engage in high-risk behaviours due to fewer protective structures and diminished access to formal economic pathways.

In Mandera's unique socio-cultural environment, unemployment and idleness take on additional meaning. Youth often lack recreational facilities, structured social activities and professional mentorship opportunities. In such settings, peers become critical influencers, and boredom becomes a powerful driver of risk-taking behaviour. The findings therefore support the argument that socio-economic marginalisation is a

central determinant of substance use in Mandera, mirroring patterns observed in studies conducted across Kenya and sub-Saharan Africa.

### 5.1.2 Prevalence, sources and patterns of codeine-containing drug use

The study established that codeine-containing syrups, tablets and capsules are widely misused by youth in Mandera. Betapyn, Benylin with Codeine, Codeine Phosphate Linctus and Biocof Linctus emerged as the most frequently used drugs. This aligns with Mokaya et al. (2016) and Kerubo et al. (2016), who documented similar patterns in other regions of Kenya where over-the-counter access remains largely unregulated.

A key driver of this widespread misuse is the ease of accessibility. Youth reported obtaining codeine-containing drugs from multiple formal and informal sources, including chemists, general shops and, notably, Miraa outlets. Although the present study did not trace the supply chains, the repeated mention of these outlets underscores the extent of unregulated pharmaceutical distribution. This supports Kimergard et al. (2017), who argue that misuse is often shaped not by medical necessity but by availability and affordability of drugs within local markets.

The association between Miraa chewing and codeine use appears to be behavioural rather than cultural or religious. Miraa's stimulant effects, combined with codeine's sedative properties, may create a psychoactive balance that some users find desirable. The cyclical pairing of stimulant and depressant substances has been observed elsewhere (Alsalahi et al., 2012), suggesting a broader pattern of polydrug use among youth seeking either heightened euphoria or prolonged social engagement. In Mandera, this combination may also be reinforced by peer networks and the social setting in which Miraa outlets operate, making them natural points of convergence for substance-using youth.

Gender differences were pronounced: males were significantly more likely than females to use codeine-containing drugs. This pattern mirrors global and regional literature showing that males often engage in higher-risk behaviours due to social expectations, greater mobility and lower perceived vulnerability (Wells et al., 2018; Datta et al., 2015). Female avoidance of codeine misuse has been linked to stronger health-conscious behaviours, cultural restrictions on mobility, and fear of social stigma. In Mandera's conservative environment, these cultural norms may further reduce female exposure to environments where drugs are sold or consumed.

Importantly, the findings indicate that codeine misuse is not an isolated phenomenon but part of a broader ecosystem of substance-use behaviours shaped by accessibility, peer influence, economic hardship and socio-cultural norms. It reflects a convergence of factors that create both opportunity and incentive for youth to engage in non-medical drug use.

### 5.1.3 Factors associated with codeine-containing drug use

The findings of this study reveal multiple interacting factors that influence the likelihood of codeine-containing drug use among youth in Mandera County. These factors are not isolated; rather, they operate within a broader socio-economic and cultural context that shapes youth behaviours and vulnerabilities.

#### a) Peer Influence and Social Networks

Peer pressure emerged as one of the strongest predictors of codeine use. Many respondents indicated that their first exposure to codeine-containing drugs occurred in social settings where friends, neighbours, or slightly older peers were already consuming these substances. Such findings are consistent with Kimbui et al. (2018),

who noted that peer dynamics play a foundational role in initiating and sustaining substance use among adolescents and young adults. Youth often rely heavily on their social networks for emotional support, identity validation and recreation. When these networks normalise or glamorise drug use, individuals may feel compelled to participate to gain acceptance or avoid exclusion. This phenomenon is particularly potent in Mandera, where recreational alternatives are limited and social gathering spaces are few, thereby reinforcing group-based drug-use behaviours.

**b) Economic Vulnerabilities and Unemployment**

Unemployment and low income were frequently mentioned by respondents as underlying contributors to codeine use. Economic hardship can foster a sense of stagnation, hopelessness or lack of purpose, which in turn may lead youth to seek temporary relief through psychoactive substances. Adeleke et al. (2019) explain that economically disenfranchised youth often turn to drug use as a means of coping with emotional and psychological strain. In Mandera, many youths lack stable employment opportunities due to limited economic diversification, persistent insecurity and inadequate vocational training pathways. These conditions create fertile ground for drug misuse, as idle time and unmet ambitions intensify vulnerability.

**c) Low Educational Attainment**

The study also demonstrated that lower levels of education were associated with higher engagement in non-medical codeine use. This is consistent with findings by Chege et al. (2017), who argue that limited education restricts access to information, weakens critical decision-making skills and reduces awareness of the long-term health risks associated with substance abuse. Youth with lower educational attainment may also lack opportunities for formal employment or advanced training, thereby

deepening feelings of social disadvantage. In Mandera, where fewer institutions of higher learning exist and school dropout rates remain high, this pattern represents a structural driver of drug misuse.

**d) Parenting and Family Dynamics**

Weak parental supervision, strained family relationships and minimal adult guidance were identified as contributors to drug-use behaviour. More than half of the respondents who reported using codeine-containing drugs indicated that they consumed these substances in secluded places, often beyond the knowledge or monitoring of their parents. This aligns with Whitesell et al. (2013), who highlight the protective role of positive parental engagement and effective communication in reducing adolescent risk behaviours. In Mandera, traditional family structures have shifted due to economic hardship, migration and urbanisation, resulting in reduced parental oversight and weakened protective mechanisms.

**e) Accessibility of Codeine-Containing Medicines**

Ease of access was consistently mentioned as a driver of misuse. The fact that youths can purchase these drugs from unregulated outlets—including Miraa stalls, shops, and informal vendors—creates an environment where misuse is almost effortless. This finding is reinforced by global studies (Fingleton et al., 2016; Shek, 2012) that link high prevalence of drug misuse to the availability of prescription-only medicines in unregulated markets. Mandera's geographic position as a border county may further complicate regulatory oversight, although this study did not directly investigate cross-border movement of pharmaceutical products.

**f) Polydrug Use and Sensory Appeal**

The pairing of Miraa chewing and codeine consumption is another significant factor, driven less by cultural norms and more by functional behavioural motivations. Miraa's stimulating properties may counterbalance codeine's sedative effects, creating a heightened or prolonged psychoactive experience. Such polydrug practices have been documented in various cultural settings (Alsalahi et al., 2012) and typically form part of a ritualised social behaviour that reinforces continued use.

Collectively, these factors highlight that codeine misuse among Mandera youth is a complex phenomenon shaped by socio-economic realities, cultural dynamics, interpersonal influences and market conditions. Addressing this issue therefore requires a multidimensional and coordinated approach.

### 5.1.4 Study Limitations

Although this study provides valuable insights into the prevalence and drivers of codeine-containing drug use among youth in Mandera County, several limitations must be acknowledged to contextualise the findings.

**a) Cross-Sectional Study Design**

The study employed a cross-sectional design, which captures information at a single point in time. As such, while associations between variables can be identified, causal relationships cannot be established. This limitation means that findings related to socio-economic factors, peer influence or parental supervision must be interpreted with caution, as they may correlate with—but not necessarily cause—drug use.

**b) Limited Cultural and Religious Diversity**

The study population consisted primarily of Somali Muslims, reflecting Mandera's demographic composition. While this enhances internal consistency, it limits the ability to examine how differing cultural or religious backgrounds may influence drug-use behaviours. The degree to which cultural norms or religious teachings deter or encourage substance misuse could not be fully explored due to a lack of comparative subgroups.

**c) Gender Imbalance in the Sample**

Males were overrepresented in the sample, which may have skewed the findings. This imbalance reflects real-world demographics of drug-use patterns, as males are more likely to engage in substance use. However, the underrepresentation of females restricts detailed gender-sensitive analysis and may conceal emerging patterns among women.

**d) Sensitivity of the Topic**

Substance use is a sensitive topic, and respondents may have provided socially desirable answers or underreported their drug-use behaviours. Fear of judgement or unintended disclosure may also have influenced the accuracy of responses.

**e) Inability to Track Supply Chains**

While respondents identified various sources of codeine-containing drugs, this study did not investigate supply routes, distribution networks or the extent of regulatory gaps. Understanding these mechanisms would provide deeper insights but was beyond the scope of the study.

Despite these limitations, the study effectively addressed its objectives and provides a strong foundation for policy, intervention and future research.

## 5.2 Conclusion

This study sought to determine the prevalence, patterns, sources and determinants of codeine-containing drug use among youth in Mandera County. The findings demonstrate that codeine misuse is a significant and growing public health concern, influenced by a combination of social, economic and environmental factors.

### Conclusion on Objective 1: Prevalence, Patterns and Sources

The study established a high prevalence of codeine-containing drug use among youth. Syrups and tablets—particularly Betapyn, Codeine Phosphate Linctus, Benylin with Codeine and Biocof Linctus—were the most commonly misused. Sources were diverse and included both formal and informal avenues, revealing weaknesses in regulatory enforcement.

### Conclusion on Objective 2: Factors Associated with Codeine Use

Misuse was strongly linked to peer influence, unemployment, low education levels and minimal parental supervision. Male gender also increased the likelihood of use, while cultural and religious factors showed little influence. The availability of codeine-containing medicines in unregulated environments played a central enabling role.

### General Conclusion

Codeine misuse in Mandera County is not driven by a single factor but rather emerges from complex socio-economic challenges, social dynamics and regulatory gaps.

Addressing this issue requires a coordinated, multi-sectoral approach involving government, community structures and health systems.

### 5.3 Recommendations

#### A. Recommendations to the National Government

1. Strengthen Enforcement by the Pharmacy and Poisons Board (PPB):
   Enhance monitoring of prescription-only medicines and ensure that all chemists in Mandera comply with national regulations.
2. Target Informal and Unregulated Drug Markets:
   Implement multi-agency approaches involving PPB, NACADA, law enforcement and local authorities to identify and shut down unlicensed pharmaceutical vendors.
3. Develop National Surveillance Systems:
   Establish early-warning systems for prescription drug misuse, enabling timely intervention in communities showing increased risk.

#### B. Recommendations to the County Government of Mandera

1. Youth Empowerment and Engagement Programmes:
   Expand vocational training, sports initiatives and employment programmes aimed at reducing idleness and economic vulnerability among youth.
2. Regulation of Miraa Outlets:
   Introduce county legislation to supervise and license Miraa-selling points, given their documented role in distributing codeine-containing drugs.
3. Public Awareness Campaigns:
   Implement sustained educational programmes through schools, mosques,

media and youth organisations to raise awareness about the dangers of codeine misuse.

### 5.4 Suggestions for Further Research

1. Longitudinal Studies:

   To establish causal relationships between socio-economic factors and codeine misuse over time.
2. Comparative Studies Across Counties:

   Conduct similar studies in Wajir and Garissa to determine whether patterns observed in Mandera are replicated elsewhere.
3. Health Impact Studies:

   Investigate both short- and long-term health consequences of codeine misuse among youth.
4. Broader Pharmaceutical Abuse Patterns:

   Explore misuse of other prescription-only and over-the-counter medicines to map emerging trends in pharmaceutical abuse.

# REFERENCES

Adeleke, O. A. (2019). Factors Influencing the Adoption and Use of Information Communication Technologies (ICT) Among Librarians: A Study of Public Libraries in South West Nigeria.

Akande-Sholabi, W., Adisa, R., Ilesanmi, O. S., & Bello, A. E. (2019). Extent of misuse and dependence of codeine-containing products among medical and pharmacy students in a Nigerian University. *BMC public health*, *19*(1), 1709.

Alsalahi, A., Abdulla, M. A., Al-Mamary, M., Noordin, M. I., Abdelwahab, S. I., Alabsi, A. M., ... & Alshawsh, M. A. (2012). Toxicological features of Catha edulis (khat) on livers and kidneys of male and female Sprague-Dawley rats: a subchronic study. *Evidence-Based Complementary and Alternative Medicine*, *2012*(1), 829401.

Ambale, O. J. (2015). [Title]. [Journal, volume(issue)], [pages].

Atwoli, L., Mungla, P. A., Ndung'u, M. N., Kinoti, K. C., & Ogot, E. M. (2011). Prevalence of substance use among college students in Eldoret, western Kenya. *BMC psychiatry*, *11*(1), 34.

Campello, D. I. K., Mattfeld, M. E., & Saenz, E. (2016). Marica Ferri; National Institute of Drug Abuse (NIDA); Inter-American Drug Abuse Control Commission (CICAD), in particular, Ms. Alexandra Hill. *Substance Abuse and Mental Health Services Administration (SAMHSA)*.

Cannon, B. J., & Ali, J. H. (2018). Devolution in Kenya four years on: A review of implementation and effects in mandera county. *African Conflict and Peacebuilding Review*, *8*(1), 1-28.

Carney, T., Wells, J., Parry, C. D., McGuinness, P., Harris, R., & Van Hout, M. C. (2018). A comparative analysis of pharmacists' perspectives on codeine use and misuse–a three country survey. *Substance abuse treatment, prevention, and policy*, *13*(1), 12.

Chesang, R. K. (2016). [Title]. [Journal, volume(issue)], [pages].

Cowie, T. (2017). Codeine dependence in Australia: Emerging patterns. Australian Pharmacist, 36(12), 22–27.

Dada, S., Burnhams, N. H., Van Hout, M. C., & Parry, C. D. H. (2015). Codeine misuse and dependence in South Africa–learning from substance abuse treatment admissions. *South African medical journal*, *105*(9), 776-779.

Dean, L., & Kane, M. (2025). Codeine therapy and CYP2D6 genotype. *Medical genetics summaries [internet]*.

Dube, A. K., & Orodho, J. A. (2014). Dismal transition, retention and performance of the girl child: What are the explanatory variables in Rhamu Town, Mandera County, Kenya. *International Organization of Scientific Research (IOSR) Journal of Humanities and Social Sciences (IOSR-JHSS)*, *19*(7), 37-46.

Fingleton, N. A., Watson, M. C., Duncan, E. M., & Matheson, C. (2016). Non-prescription medicine misuse, abuse and dependence: a cross-sectional survey of the UK general population. *Journal of Public Health*, *38*(4), 722-730.

Fisher, A. A., Laing, J. E., Stoeckel, J. E., & Townsend, J. W. (1998). Handbook for family planning operations research and design (2nd ed.). Population Council.

Government of Kenya. (2007). Kenya Vision 2030. Government Printer.

Hong, H., Goodsaid, F., Shi, L., & Tong, W. (2010). Molecular biomarkers: a US FDA effort. *Biomarkers in Medicine*, *4*(2), 215-225.

Ikoh, M. U., Smah, S. O., Okwanya, I., Clement, U. A., & Aposhi, Z. A. (2019). Factors affecting entry into drug abuse among youths in Lafia metropolis: implications on security. *Sage open*, *9*(1), 2158244018823428.

jin Tchoe, H., Jeong, S., Won, D. Y., Nam, J. H., Joung, K. I., & Shin, J. Y. (2020). Increased risk of death with codeine use in the elderly over 85 years old and patients with respiratory disease: A case-control study using retrospective insurance claims database. *Medicine*, *99*(38), e22155.

Jones, T. M., Hill, K. G., Epstein, M., Lee, J. O., Hawkins, J. D., & Catalano, R. F. (2016). Understanding the interplay of individual and social–developmental factors in the progression of substance use and mental health from childhood to adulthood. *Development and psychopathology*, *28*(3), 721-741.

Kasundu, B., Mutiso, M. M., Chebet, P. S., & Mwirigi, P. W. (2012). Factors contributing to drug abuse among the youth in Kenya: A Case of Bamburi Location. *Elixir International Journal*, *46*, 8259-8267.

Kerubo, A. L., Ngayo, M. O., Gikunju, J., & Karama, M. (2016). Substance abuse among college youth in one of the largest transit hub in Machakos County Kenya; a cross sectional study on prevalence and associated factors.

Khurana, A., Romer, D., Betancourt, L. M., & Hurt, H. (2018). Modeling trajectories of sensation seeking and impulsivity dimensions from early to late adolescence: universal trends or distinct sub-groups?. *Journal of youth and adolescence*, *47*(9), 1992-2005.

Kimbui, E., Kuria, M., Yator, O., & Kumar, M. (2018). A cross-sectional study of depression with comorbid substance use dependency in pregnant adolescents from an informal settlement of Nairobi: drawing implications for treatment and prevention work. *Annals of general psychiatry*, *17*(1), 53.

Kimergård, A., Foley, M., Davey, Z., Dunne, J., Drummond, C., & Deluca, P. (2017). Codeine use, dependence and help-seeking behaviour in the UK and Ireland: an online cross-sectional survey. *QJM: An International Journal of Medicine*, *110*(9), 559-564.

KNBS. (2019). 2019 Kenya Population and Housing Census: Volume I – Population by County and Sub-County. KNBS.

Lee, T. Y., Shek, D. T., & Sun, R. C. (Eds.). (2015). *Student well-being in Chinese adolescents in Hong Kong: theory, intervention and research* (Vol. 7). Springer.

Lucchese, R., Silva, P. C. D., Denardi, T. C., Felipe, R. L. D., Vera, I., Castro, P. A. D., ... & Fernandes, I. L. (2017). Transtorno mental comum entre indivíduos que abusam de álcool e drogas: estudo transversal. *Texto & Contexto-Enfermagem*, *26*, e4480015.

M'Muyuri, M. M., Bururia, D. N., & Muthaa, G. M. (2014). Socio-Economic and Religious Factors Contributing to Drop Out Among Male Pupils in Primary Schools of Igembe Sub County, Kenya. *Journal of Educational Policy and Entrepreneurial Research*, *1*(2), 58-68.

Mandera County Government. (2013). Mandera County Integrated Development Plan. Mandera County.

Maretea, J. G., Kay, J., & Githaigac, D. (2022). Role of problematic internet usage in the risk of addiction to online drug and substance abuse among undergraduate students in Universities in Kenya. *Eastern African Journal of Humanities and Social Sciences, 1*(1), 10-20.

Merz, F. (2018). United Nations Office on Drugs and Crime: World Drug Report 2017. 2017. *SIRIUS-Zeitschrift für Strategische Analysen*, *2*(1), 85-86.

Middleton, M., & Nielsen, S. (2019). Changes in Australian prescription opioid use following codeine rescheduling: A retrospective study using pharmaceutical benefits data. *International Journal of Drug Policy*, *74*, 170-173.

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, *17*(4), 59-82.

Monárrez-Espino, J., Laflamme, L., Rausch, C., Elling, B., & Möller, J. (2016). New opioid analgesic use and the risk of injurious single-vehicle crashes in drivers aged 50–80 years: a population-based matched case–control study. *Age and ageing*, *45*(5), 628-634.

Mwangi, J. (2016). Examining the Influence of Drug Abuse in Learning Institutions in Kenya.

NACADA. (2012). National Alcohol and Drug Abuse Status Report. NACADA.

NCPD. (2015). Kenya National Adolescents and Youth Survey (KNAYS): Mandera County Report. NCPD.

Ndetei, D. M., Mutiso, V., Musyimi, C., Mokaya, A. G., Anderson, K. K., McKenzie, K., & Musau, A. (2016). The prevalence of mental disorders among upper primary school children in Kenya. *Social psychiatry and psychiatric epidemiology*, *51*(1), 63-71.

Nyameh, J., Yakubu, M. I., Teru, S., & Titus, A. (2013). Economic implications of drug abuse among the youths. *Journal of Economics and Sustainable Development*, *4*(11), 100-102.

Nyavanga, E. J. (2018). Miraa use among Somali Youth Living in Eastleigh, Nairobi Kenya. *European Journal of Preventive Medicine*, *6*(4), 45-52.

Olasunkanmi, A., & Isreal, A. (2019). A narrative review of codeine and preventive measures in mitigating against the widespread of its abuse and misuse. *J. Alcohol Drug Depend*, *7*(2).

Otsialo, M. (2018). Codeine addict: 'This drug made me drop out of college.' Daily Nation.

Phaswana-Mafuya, N., & Peltzer, K. (2018). Breast and cervical cancer screening prevalence and associated factors among women in the South African general population. *Asian Pacific journal of cancer prevention: APJCP*, *19*(6), 1465.\

Pourcel, L., Irani, N. G., Koo, A. J., Bohorquez-Restrepo, A., Howe, G. A., & Grotewold, E. (2013). A chemical complementation approach reveals genes and interactions of flavonoids with other pathways. *The Plant Journal*, *74*(3), 383-397.

Qadir, U. (2015). Un development programme (undp). human development report 2015-work for human development. *Pakistan Development Review*, *54*(3), 277-278.

Reguly, P., Dubois, S., & Bedard, M. (2014). Examining the impact of opioid analgesics on crash responsibility in truck drivers involved in fatal crashes. *Forensic science international*, *234*, 154-161.

Shisana, O., et al. (2012). [Title]. [Journal, volume(issue)], [pages].

Sobczak, Ł., & Goryński, K. (2020). Pharmacological aspects of over-the-counter opioid drugs misuse. *Molecules*, *25*(17), 3905.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*(6), 1273-1296.

Tesfaye, G., Derese, A., & Hambisa, M. T. (2014). Substance use and associated factors among university students in Ethiopia: A cross-sectional study. *Journal of addiction*, *2014*(1), 969837.

UNDP. (2015). Human Development Report. UNDP.

Van Hout, M. C., Horan, A., Santlal, K., Rich, E., & Bergin, M. (2018). 'Codeine is my companion': misuse and dependence on codeine containing medicines in Ireland. *Irish Journal of Psychological Medicine*, *35*(4), 275-288.

Wells, J. E., Browne, M. A., & Kendler, K. S. (2018). Gender differences in substance use and associated risk factors. *Drug and Alcohol Dependence,* 185, 1–10.

Whitesell, M., Bachand, A., Peel, J., & Brown, M. (2013). Familial, social, and individual factors contributing to risk for adolescent substance use. *Journal of addiction*, *2013*(1), 579310.

Wu, Q., Zhou, Y., Feng, F. C., & Zhou, X. M. (2019). Effectiveness and safety of Chinese medicine for idiopathic pulmonary fibrosis: a systematic review and meta-analysis. *Chinese Journal of Integrative Medicine*, *25*(10), 778-784.

Yang, M., Jiang, L., Wang, Q., Chen, H., & Xu, G. (2017). Traditional Chinese medicine for knee osteoarthritis: an overview of systematic review. *PloS one*, *12*(12), e0189884.

Yusuf, U. L., Gazali, W. A., & Abdullahi, M. (2016). Drug abuse among youths in Nigeria: Implications to national development. JSMS, 2(2), 1–1.

# APPENDICES

## APPENDIX I: INFORMED CONSENT FORM

**Factors Associated with Use of Codeine-containing Drugs among Youth in Mandera County**

### 1. Introduction

My name is Abdinasir Ahmed Sheikh and I am a postgraduate student at Moi University, Eldoret, Kenya. I am conducting a survey about the factors associated with use of codeine containing drugs among the youth in Mandera town. The purpose of this consent form is to give you the information you will need to help you decide whether you agree to participate in the study or not. Please read this form carefully.

### 2. Purpose of study

The purpose of this study is to collect information that will help the government and other stakeholders in the health sector to understand the factors associated with use of codeine containing drugs.

### 3. Procedure

If you agree to participate in this study and you me*et al*l of the study eligibility requirements, we will ask you questions in private about your social, economic and cultural background as well as pattern of drug use.

### 4. Risks and Discomfort

There are no direct or indirect risks to you or your family as a result of your participation in this interview. However, emotional discomfort may be felt as a result of past history of drug use by your or close family member. If I ask you any question you do not want to answer, just let me know and I will go on to the next question or you can stop the interview at any time in case you are not comfortable to continue.

### 5. Benefits of the study

There may be no immediate direct benefits to you from participating in this study. However, the information you provide will help the government and other stakeholders in the health sector to formulate policies and strategies to effectively deal with substance and drug use in Kenya.

### 6. Duration of the Interview

The interview will take about 30 minutes of your time to complete.

**7. Voluntary Participation**

Participation in this survey is voluntary and you can decide not to participate without any victimization.

**8. Withdrawal**

If you choose to participate in this study, you can withdraw your consent and discontinue participation at any time without prejudice.

**9. Confidentiality**

All the responses you give to the questions asked will be confidential. The records from this study will be kept as confidential as possible. No individual identities will be used in any reports or publications resulting from the study.

**Cost to you**

There is no cost to you for being in this study.

**10. Contact of Principal Investigator**

If you have any question or concerns about the study, you are free to contact the **PRINCIPAL INVESTIGATOR** of this study on **0722726735.**

Do you agree to participate in the study? Yes ☐ No ☐

**If No,** consent for participation not given, Interviewer 's signature: _____

**If yes,** consent for participation is given, obtain signature or thumbprint and proceed to the interview.

_____ _____

**Signature/Thumbprint of Study Participant** **Date**

_____ _____

**Signature of Person Obtaining Consent** **Date**

**APPENDIX II: DATA COLLECTION INSTRUMENT**

**Factors Associated with Use of Codeine-Containing Drugs among Youth in Mandera County**

**SURVEY QUESTIONNAIRE**

**Interviewer's Name: _____ Questionnaire No: _____**

| | | | | | | |
|---|---|---|---|---|---|---|
| **County** | Mandera | **Constituency** | Mandera East | | | |
| **Ward** | 1. Arabia ☐<br>2. Libehia ☐<br>3. Khalalio ☐<br>4. Neboi ☐<br>5. Township ☐ | **Village** | | | | |
| **Date** | | **Time** | **Start** | | **End** | |

**Instructions:** After obtaining the informed consent, read the following instructions to the participant. "Thank you for agreeing to take part in this brief interview. Part 1 to 3 of this questionnaire will deal with social-demographic, economic and cultural issues. Part 4 and 5 will deal with pattern of drug use. This interview excludes medications that are used as prescribed by a medical Doctor. However, we shall proceed with interview, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed. Please remember that your participation is voluntary, you may choose not answer any or all questions and you that you can withdraw at any time of the interview."

| | | |
|---|---|---|
| **1.0** | **Demography (To be completed fully)** | |
| 1.1 | Respondent's sex | 1. Male ☐ 2. Female ☐ |
| 1.2 | Age of the respondent in complete years | _____ |
| 1.3 | What is your ethnicity? | 1. Garre ☐<br>2. Murule ☐<br>3. Degodia ☐<br>4. Other (Specify) |

| | | |
|---|---|---|
| | | _____ |
| 1.4 | Marital Status | 1. Single ☐<br>2. Married ☐<br>3. Divorced ☐<br>4. Separated ☐<br>5. Widowed ☐ |
| 1.5 | Religion | 1. Christian ☐<br>2. Islam ☐<br>3. Hindu ☐<br>4. African Traditional ☐<br>5. Rastafarian ☐<br>6. Atheist ☐<br>7. Other (Specify) _____ |
| 1.6 | What is the status of your education? | 1. Never been to school ☐<br>2. Ongoing ☐<br>3. Dropped out ☐<br>4. Completed ☐ |
| 1.7 | What is your highest level of education? | 1. Primary ☐<br>2. Secondary ☐<br>3. College ☐<br>4. University ☐ |
| **2.0** | **Economic Status (To be completed fully)** | |
| 2.1 | What is your employment status? | 1. Unemployed ☐<br>2. Self-employed ☐<br>3. Employed ☐<br>4. Student ☐ |
| 2.2 | What is your main source of income? | 1. Employment (Salaried) ☐<br>2. Business ☐<br>3. Farming ☐<br>4. Donations ☐<br>5. Remittances ☐<br>6. No income ☐ |

| | | |
|---|---|---|
| 2.3 | What is the estimated monthly income? | 1. Less than 2,999 ☐<br>2. 3,000 – 5,999 ☐<br>3. 6,000 – 8,999 ☐<br>4. 9,000 – 10,999 ☐<br>5. 11,000 – 13,999 ☐<br>6. 14,000 – 15,999 ☐<br>7. More than 16,000 ☐<br>8. Indicate the Amount in KSh if not in the range provided.<br>_____ |
| 2.4 | What is your estimated monthly expenditure on the following items? Indicate the amount in Kenya shillings. | 1. Food _____<br>2. Water _____<br>3. Rent _____<br>4. Electricity _____<br>5. Education _____<br>6. Health _____ |
| **3.0** | **Social cultural (To be completed fully)** | |
| 3.1 | Do you chew *Miraa*? | 1. Yes ☐ 2. No ☐ |
| 3.2 | Does your culture allow the chewing of *Miraa*? | 1. Yes ☐ if Yes, go to 3.3<br>2. No ☐ if No go to 3.5<br>3. I don't Know ☐ |
| 3.3 | If yes, who is allowed to chew *Miraa* | 1. Men ☐<br>2. Women ☐<br>3. Men and women ☐<br>4. Youth above 18 ☐<br>5. Children below 18 years<br>6. Everybody ☐<br>7. I don't know ☐ |
| 3.4 | If yes, when is chewing of *Miraa* allowed? | 1. Weddings ☐<br>2. Birth of a child ☐<br>3. Circumcision ceremony ☐<br>4. Funerals ☐ |

| | | |
|---|---|---|
| | | 5. Holidays ☐<br>6. Anytime ☐<br>7. I don't know ☐ |
| 3.5 | Does your religion accept the chewing of *Miraa*? | 1. Yes ☐<br>2. No ☐<br>3. Controversial ☐<br>4. I don't Know ☐ |
| 3.6 | Which of the following people live in the same household with you? | 1. I live alone ☐<br>2. Father ☐<br>3. Step father ☐<br>4. Mother ☐<br>5. Step mother ☐<br>6. Brother (s) ☐<br>7. Sister(s) ☐<br>8. Grandmother ☐<br>9. Grandfather ☐<br>10. Friends ☐<br>11. Relatives ☐<br>12. Non-Relatives ☐ |
| **4.0** | **Pattern of drug use** | |
| 4.1 | In your lifetime, which of the following substances have you ever used? Select all that apply. | 1. Cigarettes ☐<br>2. Tobacco (sniffing/chewing) ☐<br>3. *Miraa*/*Muguka* ☐<br>4. Bhang ☐<br>5. Cocaine ☐<br>6. Other (Specify) _____ |
| 4.2 | In your lifetime, which of the following cough syrups have you ever used in your life time? Select all that apply. | 1. Betapyn tablets ☐<br>2. Myprodol Capsules ☐<br>3. Biocof Linctus 100ml ☐<br>4. Biocof Forte expectorant ☐<br>5. Bronkof Syrup ☐<br>6. Fopyn tablets ☐<br>7. Codelzine cough linctus ☐ |

| | | |
|---|---|---|
| | | 8. DF 118 ☐<br>9. Kofed compound Linctus ☐<br>10. Parcoten tablets ☐<br>11. Actifed dry cough & cold syrup ☐<br>12. Pynstop tablets ☐<br>13. Benylin with codeine ☐<br>14. Coscof C Linctus ☐<br>15. Coscof CD Linctus ☐<br>16. Codeine phosphate Linctus ☐<br>17. DHC 30 tablets ☐<br>18. Paraco-Denk suppositories ☐<br>19. Multipein tablets ☐<br>20. Bronyl syrup ☐<br>21. Not applicable ☐ |
| 4.3 | Do you use the cough syrup alone or you mix with other drinks? | 1. Syrup alone ☐<br>2. Syrup mixed with soft drinks ☐<br>3. Chew *Miraa* with syrup mixed with soft drinks ☐<br>4. Over dose of the cough syrup ☐<br>5. Not applicable ☐ |
| 4.4 | At what age did you start using the drug? Write down the age between 18 and 35 years. | _____ |
| 4.5 | Who introduced you to the drug use? | 1. Friend ☐<br>2. Parent ☐<br>3. Sibling ☐<br>4. Relative ☐<br>5. Teacher ☐<br>6. Not applicable ☐ |
| 4.6 | For how long have you used the drug? | 1. Week ☐<br>2. Month ☐<br>3. Year ☐ |

| | | |
|---|---|---|
| | | 4. Not applicable ☐ |
| 4.7 | What made you to start using the drug? | 1. To relax ☐<br>2. To relieve stress ☐<br>3. To cope with family problems ☐<br>4. Peer pressure ☐<br>5. Excess pocket money ☐<br>6. To enhance academic performance ☐<br>7. Source of income ☐<br>8. Poverty ☐ |
| 4.8 | Where do you buy the drug from? | _____ |
| 4.9 | What is the cost of the drug? | KSh<br>_____ |
| 4.10 | How often do you use the drug? | 1. Daily☐<br>2. Weekly ☐<br>3. Monthly☐ |
| 4.11 | Where do you take the drug? | 1. At home ☐<br>2. Alone in a Secluded place ☐<br>3. In a secluded place with friends ☐<br>4. Location of taking the drug ☐ |
| 4.12 | What is the normal dosage of the drug? | 5. 5 ml three times a day for 5 days ☐<br>6. 10 ml three times a day for 5 days ☐<br>7. 20 ml three times a day for 5 days ☐ |
| 4.13 | What dosage do you take? | 1. 5 ml three times a day for 5 days ☐<br>2. 10 ml three times a day for 5 days ☐<br>3. 20 ml three times a day for 5 days ☐ |

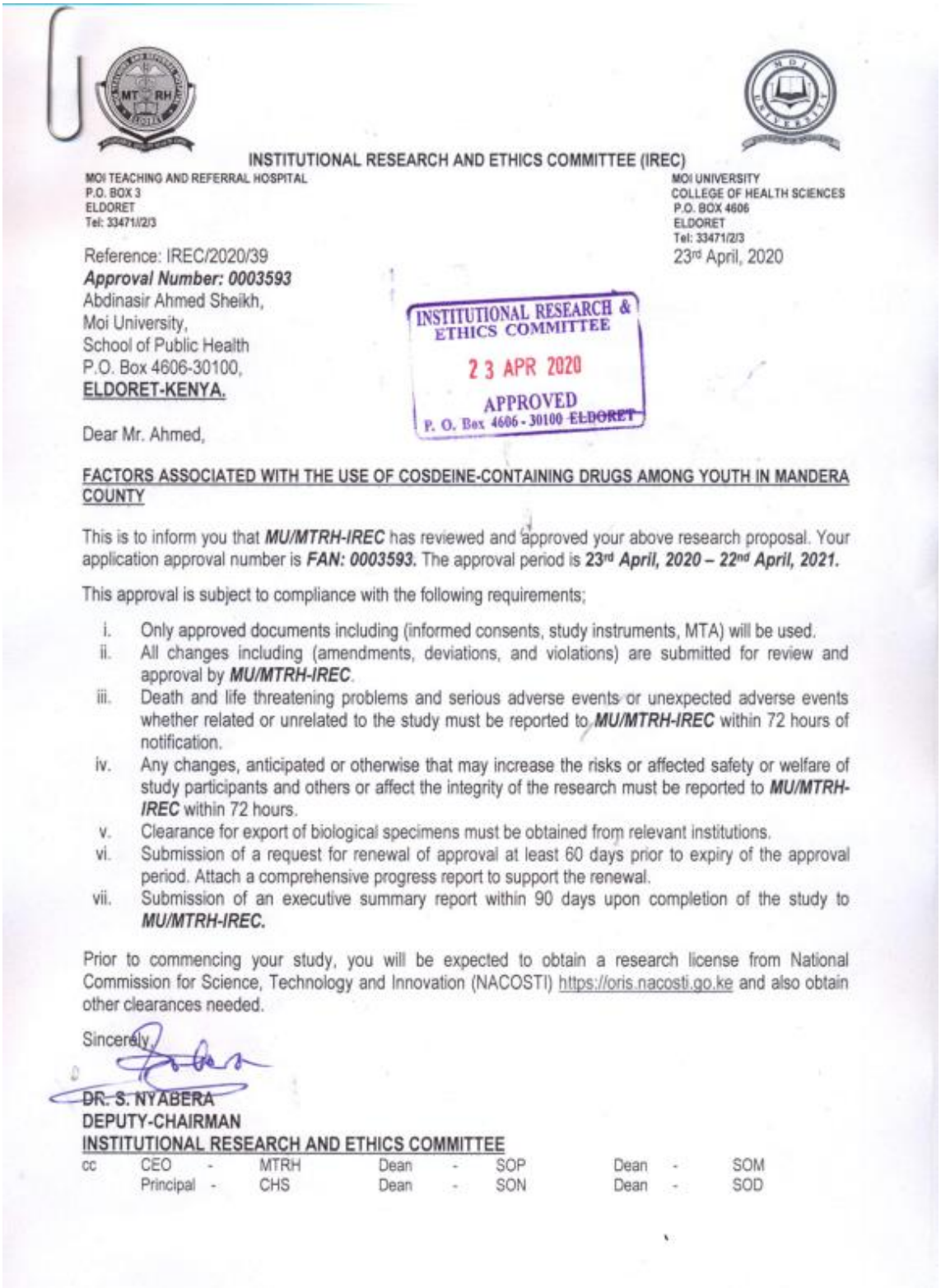
| | | |
|---|---|---|
| | | 4. Over 20 ml three times a day for 5 days ☐ |
| 4.14 | On average, how much money do you spend on drugs on daily, weekly or monthly basis? | 1. Daily _____<br>2. Weekly _____<br>3. Monthly _____ |
| 4.15 | What is the source of the money spent on drugs use? Select all that apply. | 1. From my income ☐<br>2. From parents ☐<br>3. From friends ☐<br>4. From Relatives ☐<br>5. From siblings ☐<br>6. No applicable ☐ |
| 4.16 | Did the use of drugs land you into problems? | 1. Yes ☐<br>2. No ☐<br>3. Not applicable ☐ |
| 4.17 | What are some the problems you landed into due to effects of drugs? Select all that apply. | 1. Memory loss ☐<br>2. Loss of money ☐<br>3. Loss of valuables ☐<br>4. Blackouts or flashbacks ☐<br>5. Trouble with friends ☐<br>6. Trouble with parents ☐<br>7. Trouble with siblings ☐<br>8. Trouble with relatives ☐<br>9. Trouble with police ☐<br>10. Trouble with teachers ☐<br>11. Dropped out of school ☐<br>12. Engaged in high sexual behavior ☐<br>13. Fights and Injury ☐<br>14. Arguments with people ☐<br>15. Bleeding ☐<br>16. Not applicable ☐ |

| **5.0** | **Factors contributing to drug and substance use** | |
|---|---|---|
| 5.1 | Based on your experience of drug use, to which extent do each of the following factors predispose the youth to use drugs and substances? Select all that apply | 1. Family drug-use behavior ☐<br>2. Domestic problems in the family ☐<br>3. Family involvement in selling of drugs and substances ☐<br>4. Peer pressure ☐<br>5. Poor parenting leading to indiscipline among the youth ☐<br>6. Easy availability and accessibility of drugs and substance ☐<br>7. Unemployment among the youth ☐<br>8. Drug and substance sale as a source of income ☐<br>9. Poverty ☐<br>10. Wealth in families ☐<br>11. Not applicable ☐ |

**End of interview. Thank you for your participation.**

## APPENDIX III: STUDY REVIEW AND APPROVALS

### Moi University Institutional Research and Ethics Committee (IREC) Approval



INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
COLLEGE OF HEALTH SCIENCES
P.O. BOX 4606
ELDORET
Tel: 33471/2/3

Reference: IREC/2020/39
***Approval Number: 0003593***
Abdinasir Ahmed Sheikh,
Moi University,
School of Public Health
P.O. Box 4606-30100,
**ELDORET-KENYA.**

23rd April, 2020

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
23 APR 2020
APPROVED
P. O. Box 4606 - 30100 ELDORET

Dear Mr. Ahmed,

**FACTORS ASSOCIATED WITH THE USE OF COSDEINE-CONTAINING DRUGS AMONG YOUTH IN MANDERA COUNTY**

This is to inform you that ***MU/MTRH-IREC*** has reviewed and approved your above research proposal. Your application approval number is ***FAN: 0003593.*** The approval period is ***23rd April, 2020 – 22nd April, 2021.***

This approval is subject to compliance with the following requirements;

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

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

Sincerely,

**DR. S. NYABERA**
**DEPUTY-CHAIRMAN**
**INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE**

cc CEO - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

## Appendix IV:National Commission for Science, Technology and Innovation (NACOSTI) Approval

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **174541**

Date of Issue: **15/May/2020**

**RESEARCH LICENSE**

**This is to Certify that Mr.. Abdinasir Ahmed Sheikh of Moi University, has been licensed to conduct research in Mandera on the topic: FACTORS ASSOCIATED WITH USE OF CODEINE-CONTAINING DRUGS AMONG YOUTH IN MANDERA COUNTY for the period ending : 15/May/2021.**

License No: **NACOSTI/P/20/4974**

**174541**

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

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National Commission for Science, Technology and Innovation
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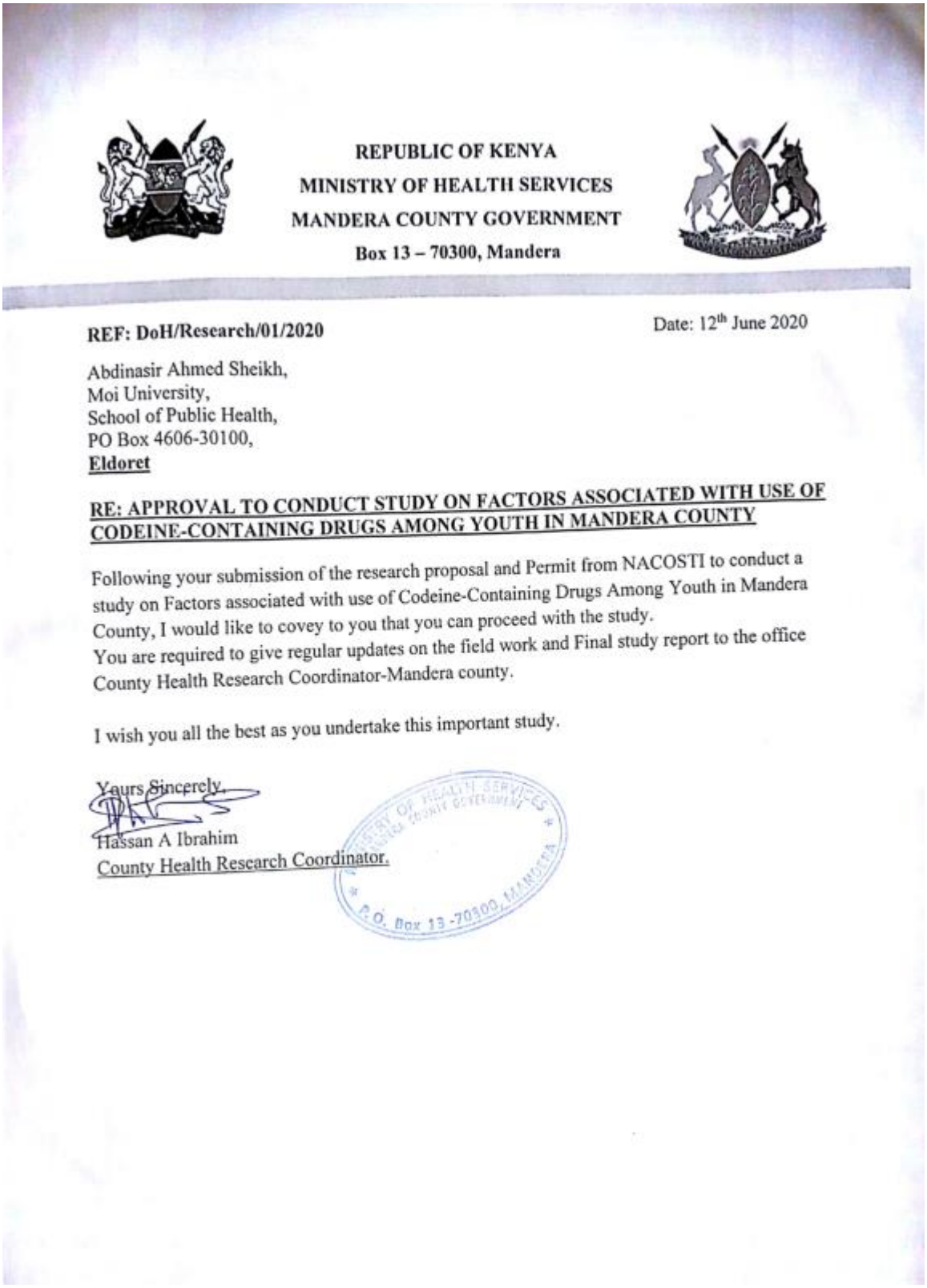
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

**Appendix V:Ministry of Health Services, Mandera County**



REPUBLIC OF KENYA
MINISTRY OF HEALTH SERVICES
MANDERA COUNTY GOVERNMENT
Box 13 – 70300, Mandera

**REF: DoH/Research/01/2020**

Date: 12th June 2020

Abdinasir Ahmed Sheikh,
Moi University,
School of Public Health,
PO Box 4606-30100,
**Eldoret**

**RE: APPROVAL TO CONDUCT STUDY ON FACTORS ASSOCIATED WITH USE OF CODEINE-CONTAINING DRUGS AMONG YOUTH IN MANDERA COUNTY**

Following your submission of the research proposal and Permit from NACOSTI to conduct a study on Factors associated with use of Codeine-Containing Drugs Among Youth in Mandera County, I would like to covey to you that you can proceed with the study.
You are required to give regular updates on the field work and Final study report to the office County Health Research Coordinator-Mandera county.

I wish you all the best as you undertake this important study.

Yours Sincerely,

Hassan A Ibrahim
County Health Research Coordinator.

P.O. Box 13-70300, MANDERA